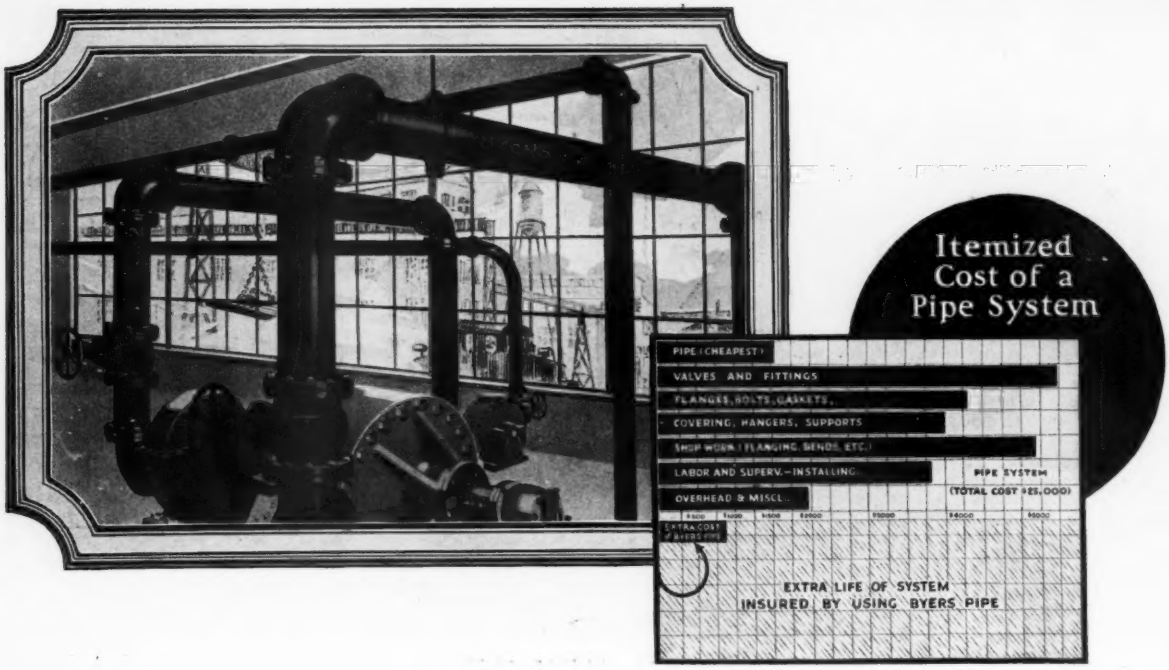
The MINING CONGRESS JOURNAL

Volume 9 JANUARY, 1923 Number 1

An Unfair Competitor

THE sale of gold by the government at its pre-war production cost absolutely destroys the law of supply and demand as it relates to gold production and puts the government squarely into business as the competitor of the gold producer in supplying gold in those fields where gold is a commodity.

It makes the government the most unfair of competitors in that the almost inexhaustible gold reserve accumulated at public expense at pre-war costs is continuously available, at a price at least fifty per cent below present production costs, to those who menace the gold standard and the stabilization of world finance by using gold for other than monetary purposes.



Consider the Installation Cost of Pipe!

When a tool or machine wears out, the replacement cost is equivalent to its market price plus the INCIDENTAL cost of delivery and installation. But when pipe rusts out, the cost of the pipe itself is but a small and incidental item in the replacement cost.

As a consequence, the durability or rust-resistance of the pipe you use for steam and steam drains, water, air and process lines, is of vital importance. And the economy of using the best pipe for every service is apparent. Even where the pipe is exposed and readily accessible, the cost of repairs and renewals is usually TEN TIMES GREATER THAN THE INITIAL COST OF THE PIPE WHICH CAUSED THE FAILURE.

Study the diagram! Note the usual items of cost in a pipe system, and the small extra cost of Byers pipe. Note also the fact that Byers pipe, being made from rust-resisting, genuine wrought iron, practically doubles the life of the system.

Byers Bulletin No. 38 contains Analysis of Items of Cost in a variety of pipe systems, with notes on replacement costs and corrosive conditions. Sent Free on request.

A. M. BYERS COMPANY

PITTSBURGH, PA.

Established 1864

New York	**Boston**	**Philadelphia**	**Cleveland**
Chicago	**Tulsa**	**Houston**	**Los Angeles**

BYERS PIPE

GENUINE WROUGHT IRON

Look for the Name and Year rolled in every length

"The Waugh Way Wins"

Concerning Close Quarters

UNDERGROUND drilling in close quarters demands a short machine, light in weight, easily operated, smooth in action, yet powerful in both rotation and striking force and capable of long-continued, efficient service in plugging, drifting, or sinking.

JUST such a drill is the Waugh "93"—without a rival for general utility work in ordinary rock formations. The nearest Waugh branch office will be glad to send you a copy of the "Ninety Series" booklet. Ask them today.

THE Denver Rock Drill Manufacturing Co.

Denver, Colorado

Rock Drills, Drill Steel Sharpeners and Hole Punchers, Portable Hoists

San Francisco	*El Paso*	*Joplin*	*Lima*	*New York City*	*Melbourne*
Scranton	*Seattle*	*Wallace*	*Santiago*	*Houghton*	*Mexico City*
St. Louis	*Salt Lake City*	*Birmingham*	*Duluth*	*Butte*	*Tokyo*

Canadian Rock Drill Company. Limited

Sole Agents in Canada

Toronto *Cobalt* *Nelson* *Vancouver*

The Denver Rock Drill & Machinery Company, Ltd.

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Southern Life Building
Johannesburg, Transvaal, South Africa

K-10

Aero Brand Cyanide

In every mining country in the world Aero Brand Cyanide is being used for the extraction of gold and silver ores.

The consumption of Aero Brand for this purpose exceeds that of all other cyanides combined.

A record of this kind, achieved in less than six years, must rest upon fundamental realities.

Aero Brand Cyanide does the work that it is intended to do, efficiently and at the lowest cost.

AMERICAN CYANAMID COMPANY
511 FIFTH AVENUE NEW YORK CITY

THE MINING CONGRESS JOURNAL

JANUARY, 1923

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IRA L. SMITH
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NEW YORK, N. Y.

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Cyanogen contents 51-52%

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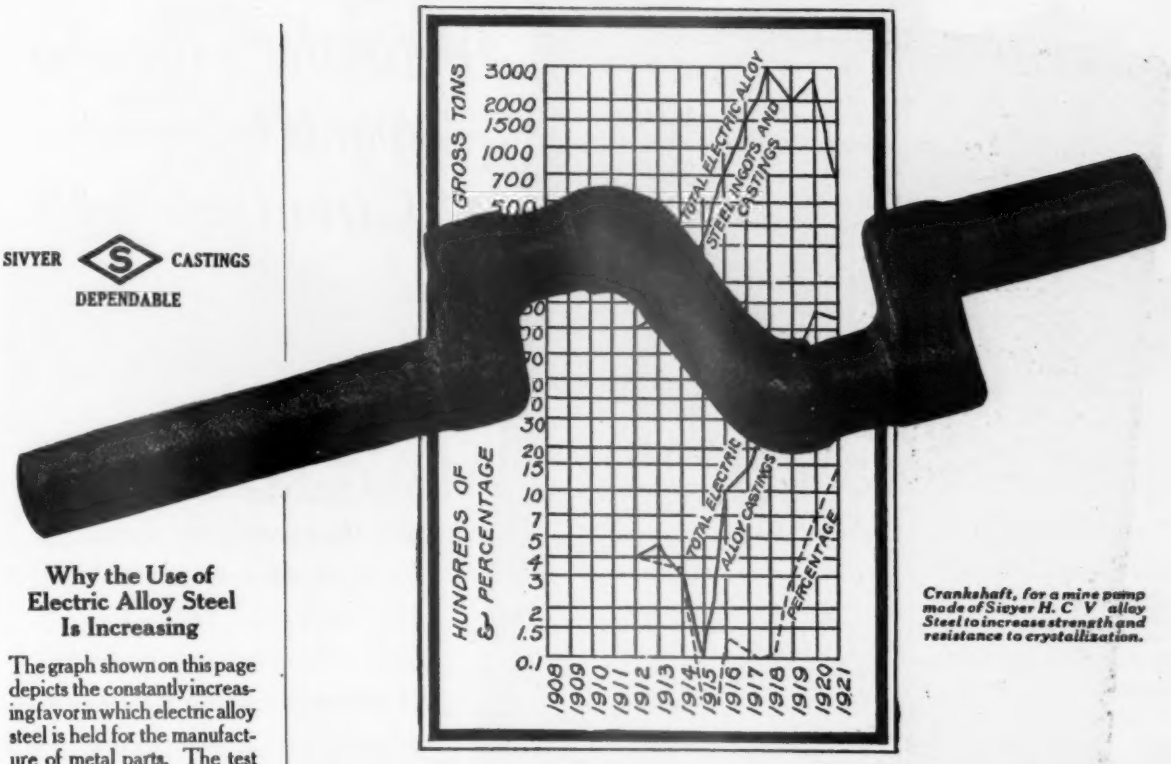
DEPENDABLE



Crankshaft, for a mine pump made of Sivyer H. C V alloy Steel to increase strength and resistance to crystallization.

Why the Use of Electric Alloy Steel Is Increasing

The graph shown on this page depicts the constantly increasing favor in which electric alloy steel is held for the manufacture of metal parts. The test tables below show representative qualities of Sivyer Electric alloys. These test figures will, of course, vary for each alloy as its composition is varied to meet specific conditions.

Sivyer Vanadium Electric Furnace Steel Representative Properties —Annealed Castings.
Tensile Strength...85,000 lbs.
Elastic Limit .....48,000 "
Elongation in 2".....24%
Reduction in Area.....28%

Sivyer Nickel Electric Furnace Steel Representative Properties —Annealed Castings.
Tensile Strength...95,000 lbs.
Elastic Limit.....55,000 "
Elongation in 2".....25%
Reduction in Area.....30%

Sivyer Chrome Electric Furnace Steel Representative Properties —Annealed Castings.
Tensile Strength...95,000 lbs.
Elastic Limit.....50,000 "
Elongation in 2".....20%
Reduction in Area.....25%

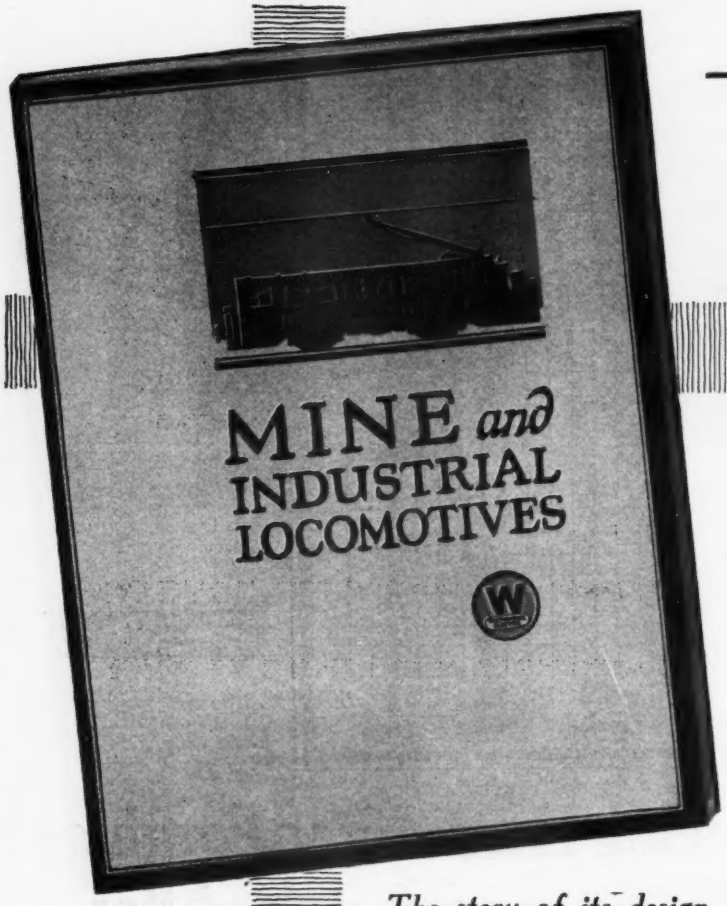
Sivyer Hi Carbon Electric Furnace Steel Representative Properties —Annealed Castings.
Tensile Strength...80,000 lbs.
Elastic Limit.....45,000 "
Elongation in 2".....20%
Reduction in Area.....24%

Replacing Hammered Forgings With Sivyer Electric Alloy

A MANUFACTURER of compressors and pumps for use in mines found that his machining costs for crankshafts made of hammered forgings were high. He was using forgings because he did not think that any cast steel could withstand the crystallizing effect of the alternating stresses and strains of crankshaft service. He heard of Sivyer H. C. V. (High Carbon Vanadium) castings, had some made, and tested and tried them. Their anti-crystallization properties, strength, and low machining costs were so superior that not only his crankshafts but also his connecting rods and other parts are now being made in this superior electric alloy.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE



Baldwin - Westinghouse Barsteel Trolley and Storage Battery Locomotives are built in many sizes for every mining service.

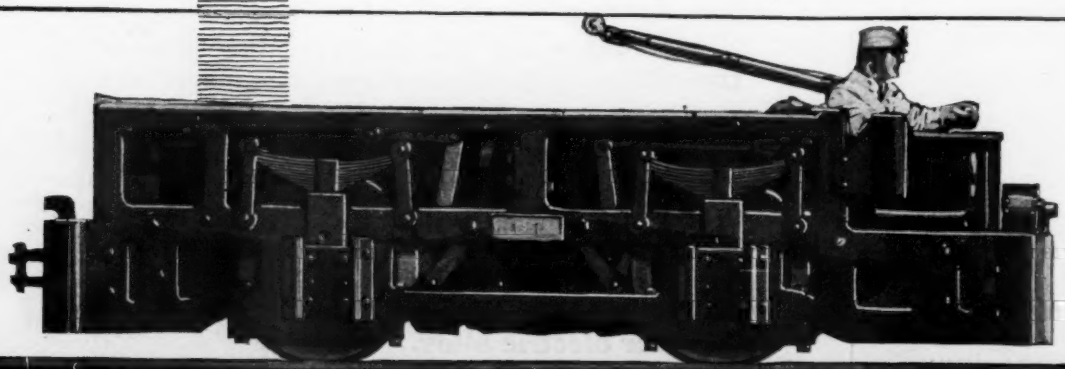
—for the man who wants to know— Circular 1648

This circular was prepared for the man who wants to know exactly what he buys. We welcome this class of buyer, because the Baldwin-Westinghouse Barsteel Locomotive has a real story of merit behind it.

The story of its design, construction and use is told in Circular 1648, which will gladly be mailed upon request.

The Baldwin Locomotive Works
Philadelphia, Pa.

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.



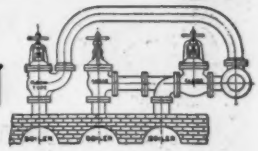
Westinghouse

CHARLES E. GOLDEN
President and General Manager

ENGINEERS
Think This Over

Mr. Golden says: "Don't be content with Pop Safety Valves. In the event of a ruptured boiler tube or steam pipe they are useless to control the rush of steam from all your boilers through the break. Think of the chance you take in not preventing this possibility."

The big iron and steel plants, realizing the importance of protection against this danger of shutdown and disaster, have installed.



4100 GOLDEN-ANDERSON
Life and Property Insurance Valves

"Every Valve with a Positive Guarantee"

"Hosts of References"

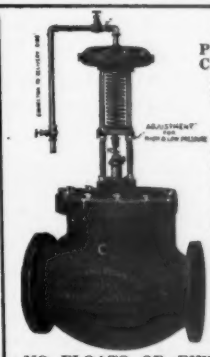
"Double Extra Heavy Valves"

1. Automatically cut out a boiler the instant that a tube ruptures or other internal break occurs.
2. Automatically cut off the steam flow from every boiler the instant that a steam pipe bursts.
3. Automatically equalize the pressure between all boilers.
4. Automatically cut in a boiler, making accidents due to inaccurate steam gage impossible.
5. Positively prevent backflow of steam into a cold boiler.
6. Can be closed by hand, like ordinary stop valve, and arranged with "combination feature" to open valve like regular gate or globe valve.
7. Can be tested in service from the boiler room floor.
8. Double Corliss Dash Pot that cushions in opening and closing.
9. Cannot pound, spin, stick or chatter.

"No Shut-Down When a Tube Bursts"

Golden-Anderson Automatic Cushioned Water Pressure Regulating Valves

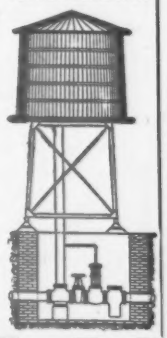
Will establish positively steady reduced water pressure. Easily adjusted from the outside. Fitted with patented safety piston to remove danger of high pressure from reaching low pressure side. Cushioned by water and air. No shock in seating. Sizes to 30 in.



GOLDEN-ANDERSON

Pat. Automatic Cushioned Altitude Controlling Valves

Three ways of closing: automatically by water, electrically from distant points and by hand. Sizes to 30 in.



NO FLOATS OR FIXTURES

GOLDEN-ANDERSON

Patented Automatic Cushioned Float Valves

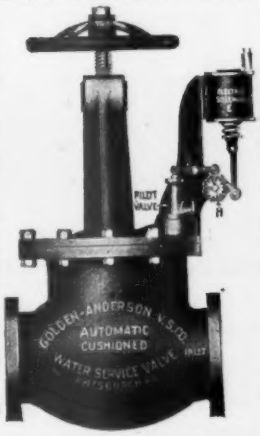
Will positively keep water lever between two fixed heights. Cushioned against shock. Fitted with swiveling float arm. Angle or Globe up to 30 in.

Angle or Globe up to 24 in.

GOLDEN-ANDERSON

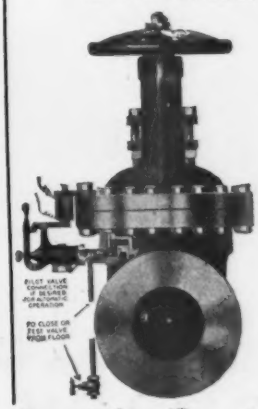
Patent Cushioned Water Service Valves

1. These valves are especially designed for fire protection to quickly build up full water pressure.
2. Can be opened and closed instantly from distant points by electricity.
3. Current is on only a few seconds thereby preventing waste.
4. Can be fitted with either d. c. or a. c. solenoid.
5. Perfectly cushioned by water and air. Positively no metal-to-metal seating.
6. Can be closed by hand.



GOLDEN-ANDERSON

Pat. Cushioned Combine Throttle and Automatic Engine Stop Valves



1—Can be operated by electricity from distant points, insuring instant checking of steam to runaway engine, or any part of the entire plant piping system.

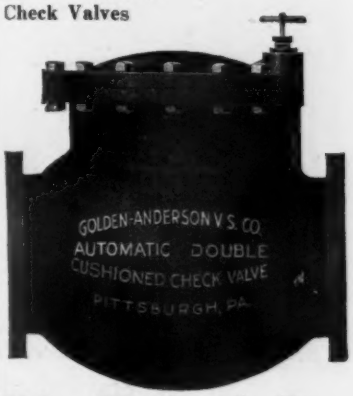
2—Equipped with double Corliss Dash Pots. No chattering, pounding or sticking is possible.

3—Double extra heavy construction; occupy minimum head room.

4—Sizes up to 20 inches.

GOLDEN-ANDERSON

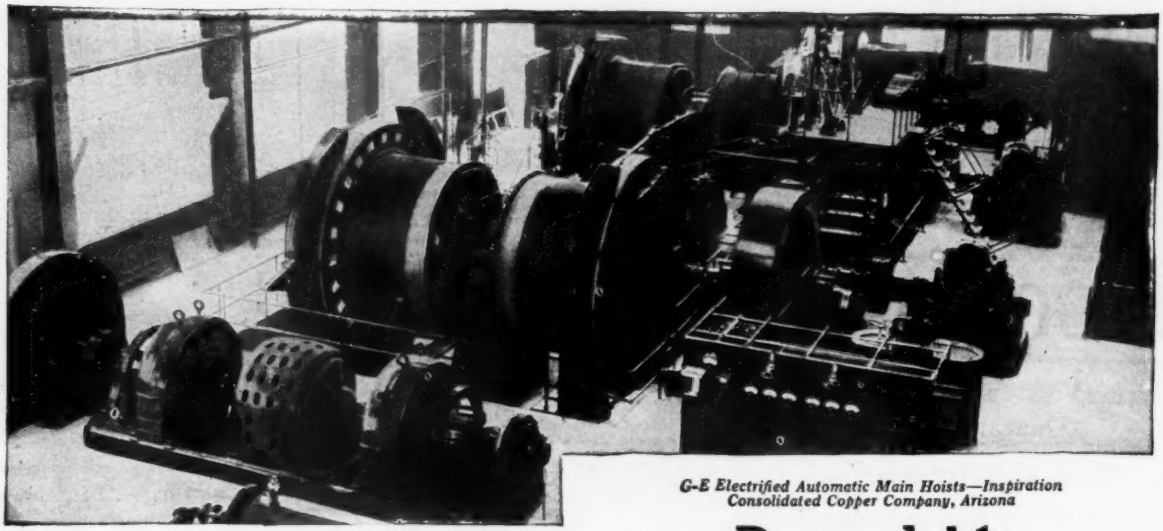
Patent Automatic Double Cushioned Check Valves



Golden-Anderson Valve Specialty Co., 1304 Fulton Bldg., Pittsburgh, Pa.

Metal Mine Electrification

Electric Hoists



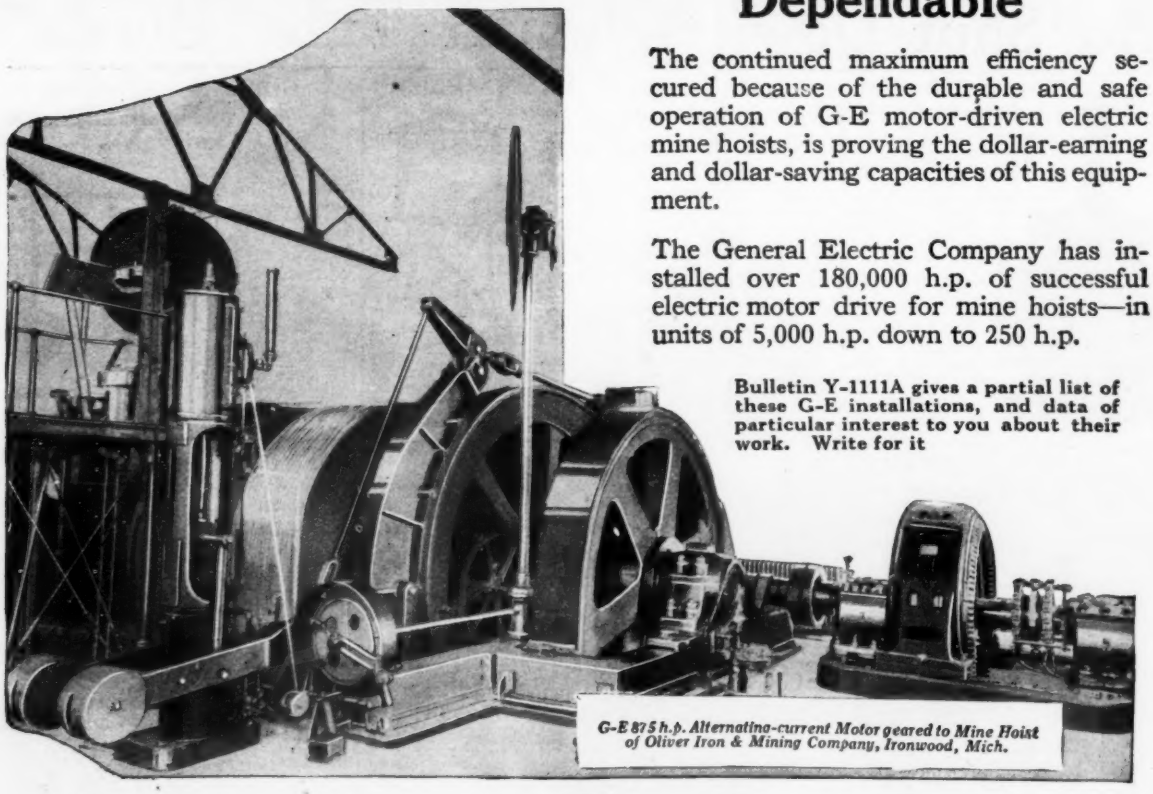
G-E Electrified Automatic Main Hoists—Inspiration Consolidated Copper Company, Arizona

Dependable

The continued maximum efficiency secured because of the durable and safe operation of G-E motor-driven electric mine hoists, is proving the dollar-earning and dollar-saving capacities of this equipment.

The General Electric Company has installed over 180,000 h.p. of successful electric motor drive for mine hoists—in units of 5,000 h.p. down to 250 h.p.

Bulletin Y-1111A gives a partial list of these G-E installations, and data of particular interest to you about their work. Write for it



G-E 875 h.p. Alternating-current Motor geared to Mine Hoist of Oliver Iron & Mining Company, Ironwood, Mich.

General Electric Company

General Office Schenectady, N.Y.

Sales Offices in all large cities

43B-700X

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Jackhamers
Stopehamers
Drifters
Drill Sharpeners
Oil Furnaces
Compressors
Pumps
and

PRICE OIL ENGINES

112-LI

Records Prove Worth of Leyner-Ingersoll Drifters

Consult repair part cost sheets, also consult figures showing the footage drilled by "Leyner-Ingersoll" Drifters.

Notice how low is the upkeep cost per foot of holes drilled.

These records will prove that "Leyner-Ingersolls" stay underground on the job doing satisfactory work.

Results are what count with you.

These records form the best basis for your future drill specifications. After a careful analysis you will always specify "Leyner-Ingersolls."

Ask the drill operator. Talk to the drill "Doctor," consult the records, and

Request Bulletin No. 4038.

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Ingersoll-Rand

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DANVILLE, ILL.

BUILDERS OF COAL MINE MACHINERY, HOISTING AND TIPPLE EQUIPMENT

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SPECIALISTS IN

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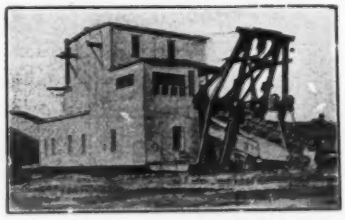

PLACER
Mining Equipment

SLUICES, RIFFLES, PIPE LINES, GIANTS

Our factory, located at tidewater at Yonkers, N. Y., is most favorably located for export shipments by water as well as for domestic shipments via New York Central lines, and is within easy access of the raw materials markets. Our manufacturing facilities, coupled with our experience in placer fields the world over, enables us to render a service that is a guarantee of satisfaction

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Office 2 Rector St. New York — **NEW YORK ENGINEERING COMPANY** — Works Yonkers, N. Y.

DUPLICATE
REPORT OF MINE INSPECTION
I have this day Any day, inspected the Your Mine mine
any County, and found that the total quantity of air at the inlet was
Abundant cubic ft. per minut was measured in each entry beyond the last
room turned, and in the c ms in each entry. The quantity of
air measured in each c
Split No.
Cubic Feet Air
Cubic Feet Air
Number Persons
THE BUCKEYE BLOWER COMPANY

A Clean Inspection Report Always for

BUCKEYE FANS

Buckeye Fans put the mine on a safety basis and increase the output per man owing to an abundant supply of fresh air. After firing, Buckeye enables the men to go back to their work quickly as it clears out the smoke with a very little waste of time. Put a Buckeye on the job and keep your mine free from danger of gases, and at the same time have the best possible working conditions for your men.

Buckeye Blower Co.

COLUMBUS, OHIO

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258 Candler Annex, Atlanta, Ga.
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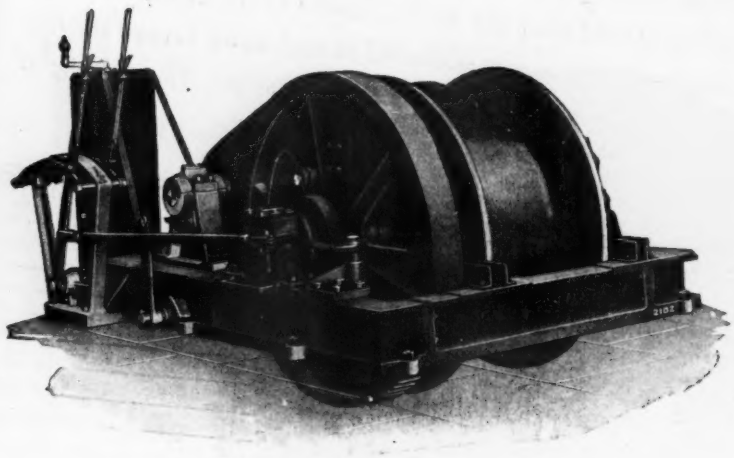
LIDGERWOOD MINE HOISTS

Electric built in any size ***Steam up to 1000 H. P.***



WE build mine hoists in types and sizes to meet every requirement of mine service.

Economy is the Keynote in the Construction of Lidgerwood Hoists

The design, material and workmanship are the best obtainable. The result is a smooth running, well balanced hoist, with internal friction reduced to a minimum, giving the greatest rope pull for the power expended.

This is True Economy

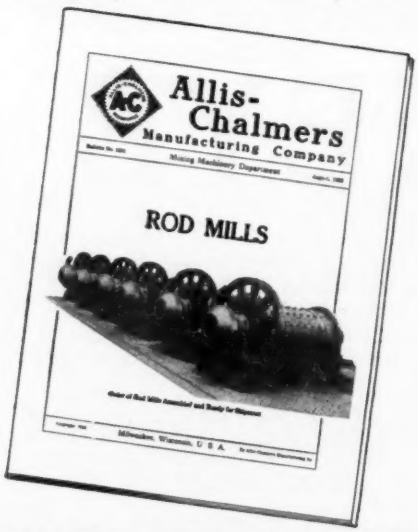
Lidgerwood Mfg. Co. **96 Liberty Street, New York**

Philadelphia Pittsburgh Chicago Cleveland Detroit Los Angeles Seattle London, England

Now Ready for Distribution

ROD MILL

Bulletin 1821



This new publication contains capacity tables, clearance sketches an other information regarding

ROD MILLS

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Crushing and Cement Machinery
Mining Machinery

ALLIS-CHALMERS MANUFACTURING COMPANY

MILWAUKEE, WISCONSIN. U.S.A.

ALLIS-CHALMERS PRODUCTS
Flour and Saw Mill Machinery
Power Transmission Machinery
Pumping Engines-Centrifugal Pumps
Steam and Electric Hoists
Air Compressors - Air Brakes
Agricultural Machinery
Condensers

Universal Shortwall on a Running Cut in a Wide Room

For Lower Costs—

THE UNIVERSAL CONTROL SHORTWALL

The performance of the Universal Control Shortwall has brought out many notable things about this new coal cutter. One thing is its low maintenance cost.

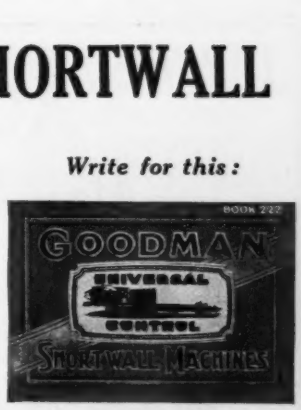
Analyzing the Universal Control you are quick to discover the reason. It is evident that everything which the earlier Goodman Shortwalls did may be done by the Universal Control—and done more easily, smoothly and quickly.

Power on both rope drums has increased its flexibility and has added speed.

What is more, the variable speed control, which automatically regulates the high and low speeds of both rope drums, assures smoothness and exact adaptability to conditions.

The combination of speed and smoothness in cutting enables the Universal Control to do increased work with less effort—and that means reduced maintenance costs.

Write for this:



If you are looking for ways to reduce your operating costs write for our new 56-page book. It will be sent free.

"Send Book 222-M"

GOODMAN MANUFACTURING COMPANY

CHICAGO, ILL.

(18)

Leschen Wire Ropes and Aerial Wire Rope Tramways

Are Dependable at all Times,—Even Under Bad Conditions.

In business since 1857

A. Leschen & Sons Rope Company

St. Louis, Mo.

New York, Chicago, Denver, San Francisco

ACCURATE WEIGHTS

May Mean the Difference Between Profit and Loss

No weighing device has ever proved more satisfactory than the old-fashioned beam scale when time can be taken by a reliable and skilled man to bring it to a perfect balance. But time is not always available, nor is the man in charge of weighing always reliable and skilled. And the weigher can make mistakes detrimental to your interests as well as against the miners.

The Streeter-Amet Automatic Weight Recorder removes all possibility of error in weighing by eliminating the human element from the weighing operation and by automatically printing on a paper tape the weight of each load passing over the scale.

With platform scales of proper length, cars need not be stopped, but can be accurately weighed while moving at a speed of three to four miles per hour.

Where weighing is done in hopper or weigh-pan the recorder can take care of the loads as fast as cars are brought up.

Send for catalogues and data on representative installations

STREETER-AMET WEIGHING AND RECORDING COMPANY

4101-4105 RAVENSWOOD AVE., CHICAGO

The Pyramids of Gizeh

Herodotus records that 100,000 workmen toiled for a generation to build the great Pyramids of Gizeh, tombs for Egypt's kings.

Cubes of stone as large as ten feet were quarried by driving wooden wedges into grooves in the rock and then soaking them with water. The swelling of the wedges cracked the stone which was transported to the Nile over mountains and valleys on water-bound, rock roads similar to macadam roads.

Explosives have replaced slave labor and have made possible the economical production of ore, coal, and rock products required by modern civilization. But in choosing the most economical explosive for each job there still remains an opportunity to prevent waste.

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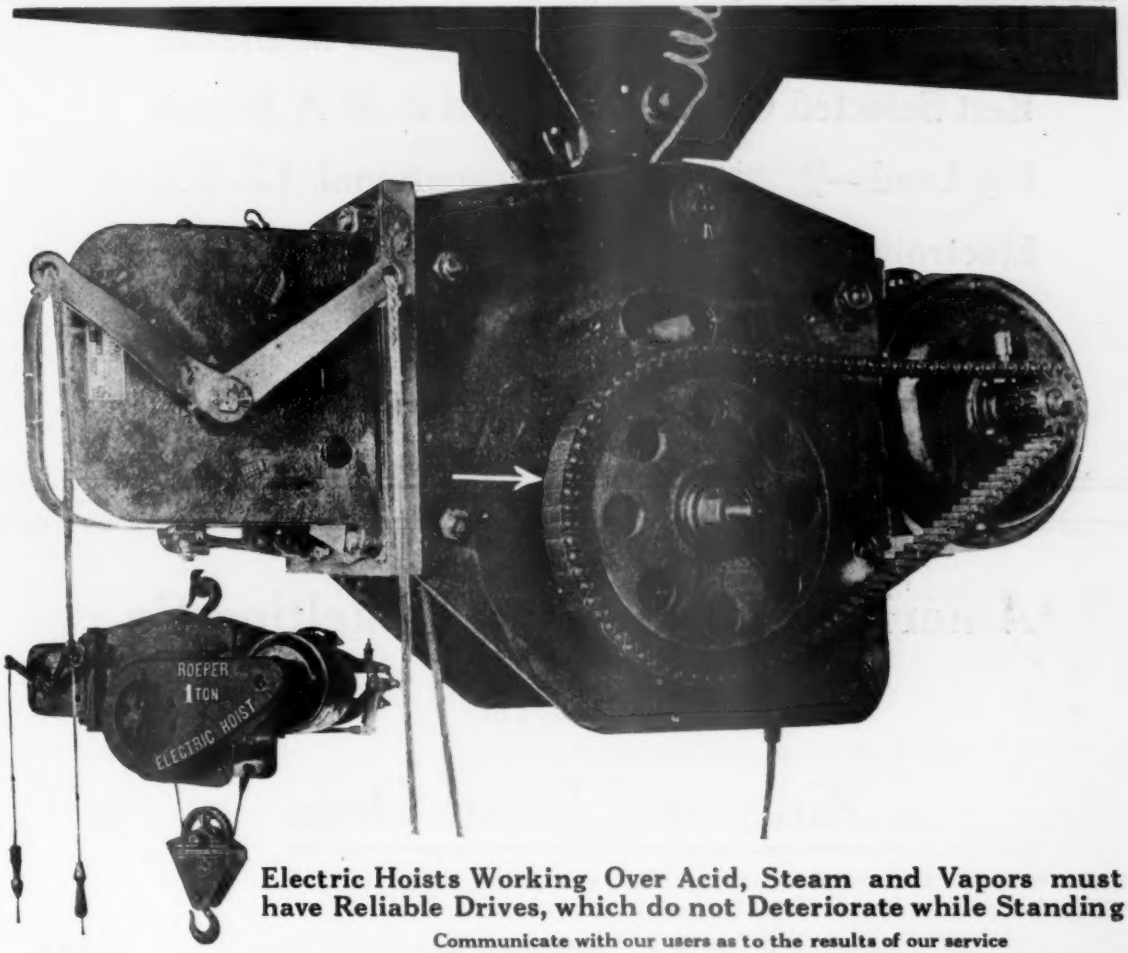

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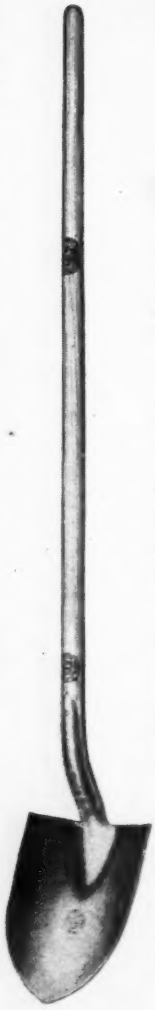

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WORLD STABILITY AND THE GOLD SUPPLY

THE FUTURE of the gold standard and the future of world stability in finance and industry are so closely inter-related that the hope for one necessarily includes a consideration of the other.

In many European countries until very recently, rates of exchange were largely based upon the British pound sterling—now the American dollar has taken the place of the British pound and is given a rating never accorded to the British symbol. This is true notwithstanding the praiseworthy boast of England that the pound sterling would always remain at par because it would always be supported not only by the British government but that the integrity of every British subject was pledged to its ultimate redemption.

Unfortunately for the world, as well as for Great Britain, sterling has been at continued discount for some years as measured by the American dollar.

The reason is easily apparent. The United States is firmly established upon a gold standard. The value of money tokens throughout the world will be found to be in proportion to the amount of gold held by the nation issuing the money under consideration.

The American dollar, based on an adequate gold reserve, is more than ever the recognized unit of value throughout the world.

It may be insisted that no single nation can maintain a world gold standard with all or nearly all other nations on an unsupported paper basis. That depends upon the financial reach of that country in world affairs.

Until recent years London was the financial center of the world. Now New York has entered upon that distinction and is assuming that responsibility. With the exercise of proper foresight and intelligence the United States may become the financial dictator among world nations.

Such foresight and intelligence manifestly must protect itself in a sufficient gold reserve without depriving other nations of a sufficient gold supply to insure the stability of ample currencies by other nations. The national debts of the world have grown from $43,000,000,000 in 1914 to about $300,000,000,000 at the present time. It is fair to assume that all other municipal and private credits have largely increased.

During those years the increase of the world's gold supply has been almost imperceptible. In the United States the use of gold for other than monetary purposes has about equaled our gold production.

At this time our gold production is less than one-half of pre-war production. There is little hope of increase with production costs eighty percent above pre-war levels and still trending upward. Further inflation in this country can only be tolerated upon the theory that we may safely dispense with world business relations, a suggestion which cannot be accepted.

No greater menace to world prosperity can be imagined than that of unstabilized and fluctuating world currencies. No greater promise can be offered for stabilized world currencies than an ample supply of gold. Can this promise be made available while our gold production is continually decreasing?

Can we force world nations into monetary insolvency and still maintain with them satisfactory business relations? And if not and the world's gold supply, much of which we now control, is made available for the stabilization of world currencies, what is to become of our own basic credit support unless we stimulate gold production; unless by artificial uplift we counteract the artificial burden which high and mounting production costs entail upon the industry the product of which is artificially fixed by governmental edict.

MINING CONGRESS JOURNAL does not believe that the present world gold supply is more than sufficient to support at par the present credit money of the world. It believes that a continuous production of gold must be maintained in proportion to increased business transaction.

It believes that a continuous depletion of gold reserves by the use of gold for other than monetary purposes should be discouraged and hampered by every lawful means, and that burdens of gold production might well be shared by those who use gold for other than monetary purposes.

This conclusion is based upon the belief that any industry ought to pay for its raw material a price fixed by the law of supply and demand rather than by government edict; that where the cost of a commodity is fixed by government edict below the cost of production that the user of that commodity can fairly be required to pay the amount which it would cost him if the machinery of production were turned over to him.

In other words, the users of gold for other than monetary purposes should be required to pay as much as this gold would cost them if all the gold mines of the country which were operated in 1915 were turned over to them for operation.

The present operating cost is approximately 80 percent above the cost of 1915. This means that the actual cost of producing the same amount of gold as was produced in 1915, viz: $101,000,000, would be $181,800,000, or $36 per ounce.

Does anyone for an instant suppose that for years to come operating costs will be less than fifty percent above pre-war levels? And will anyone justify a condition which forces the gold producer to close his mine or sell his product to a jewelry manufacturer at less than average production cost—and what is the agency which forces this injustice? The government of the United States.

That government whose administration proclaims its desire for "more business in government and less government in business."

And how is this accomplished?

The sale of gold at its pre-war production cost by the government absolutely destroys the law of supply and demand as it relates to gold production and puts the government squarely into business as the competitor of the gold producer in supplying gold in those fields where gold is a commodity.

It makes the government the most unfair of competitors in that its almost inexhaustible gold reserve accumulated at public expense at pre-war costs is continuously available at a price at least fifty percent below present production costs to those who menace the gold standard and the stabilization of world finances by using gold for other than monetary purposes.

What is the remedy—and apparently the only available remedy?

A tax upon all gold used for other than monetary purposes sufficiently high to force such users of gold to pay for their raw material what it now costs to produce it.

To support three hundred billion of credit (government indebtedness) requires more gold than to support forty-three billion credit. The gold reserve which fairly supported the pre-war credits, pre-war prices and pre-war business transactions throughout the world is not too great and probably not sufficient to support the enormously increased demand of the present.

The United States must sell about ten percent of its production in foreign markets if its industrial machinery is to be kept in continuous operation which cannot be purchased by nations lacking money or its equivalent with which to buy.

The future prosperity of the United States and the future stability of the world are largely dependent upon an increase of world gold production.

If these statements are true, then the government of the United States may well give serious consideration to the maintenance of a normal and an economically justified gold production.

THE IMMIGRATION PROBLEM

NO RESOLUTION ever adopted by an American Mining Congress Convention has called forth so much criticism as the Cleveland Resolution concerning immigration.

This partly because its meaning was misunderstood but more particularly because it was not in line with the policies of the American Federation of Labor. The long reach of the Federation's publicity department quickly and always attacks any plan which threatens to create conditions in which there are more laborers than jobs. The American Mining Congress favors a condition in which, as nearly as may be, all laborers can find regular employment at fair wages. (By fair wages it means such a wage as will enable a prudent, industrious, able-bodied man to support his family according to American standards, educate his family and save enough during his working years to provide for his old age.)

It favors a condition in which any and every enterprise by offering fair wages can secure the help necessary for its proper operation. It favors such uniformity of wage scales as will make easy the transfer of surplus men from one industry to another industry in which there is a labor shortage.

What is the present situation in the labor field? A surplus of men in the bituminous coal industry tied to the industry by an abnormally high wage scale; a great shortage in the western mines which cannot offer an inducing wage to the coal miner because the price of its important product, gold, is fixed and the wage scale which it can pay is determined by the value of its product.

There is a serious shortage of labor for the farms which not only are unable at present prices of farm products to offer an inducing wage to men receiving the higher wages paid in mining, railroading and manufacturing but are continually losing their help to the other industries. There can be but one result—a shortage of farm production which will inevitably result in higher food prices and a lessening of the value of the higher wages paid in other industries. This endless chain of mounting prices is not a remedy.

What are the remedies available? The first is to supply to the farms a sufficiency of labor at wages which present farm crop wages will justify. It is plain that this supply cannot be drawn from other industries in this country and if supplied must be by immigration.

The fact is that the objection on the part of labor organization to the admission of a proper number of immigrants is shortsighted and foolish.

High wages and steady work in industry will be of small avail if the supply of food is insufficient to meet the demand. Therefore, a farsighted policy would necessarily provide a market fully supplied with the necessities of life. This can only be supplied by the effective operation of the farm which in turn requires labor which cannot be drawn from the present industrial supply.

What, then, is the immigrant situation?

For five years before the war the net immigration to this country was in excess of an average of 900,000 persons annually. Of these emigrants approximately 250,000 were farm labor, 22,000 general labor and 180,000 skilled labor. During these years the net immigration to the United States from foreign countries was between four and five million. From 1915 to 1920 there was practically no immigration. Congress at the close of the war anticipating a dangerous influx of immigration very properly, under the then existing situation, put up the bars by the law limiting immigration to three percent, this law going into effect July 1, 1921.

Under this law immigration has been very small—the net amount during the last fiscal year being estimated at 53,000. The country finds itself short more than four million of men who would have been added during the war period if previous rate had been maintained, a similar proportional number since the close of the war and in addition thereto, short the service of 3,705,463 men who enlisted in war service for approximately a period of three years.

This enormous loss of service to the productive power of the nation may be the sole cause of the high level of prices which is again largely, if not entirely, responsible for abnormal condition of our industrial life.

Normalcy will only return when the vacuum of subnormal production has been filled. This will not happen until the supply of labor is normal and the fact that there is a marked shortage of common labor in all deflated industries at least calls for a careful investigation. It is hoped that such investigation will be made by the committee appointed in accordance with the Cleveland Resolution.

A SALUTARY SAFEGUARD

THE POWER of the courts to determine whether a law passed by a duly constituted legislative body and approved by the executive is or is not constitutional is a fundamental and necessary power in protecting the rights and the liberties of the individual.

The right of every citizen "to life, liberty and the pursuit of happiness" is the first concern of constitutional government. Those who urge that the court be not permitted to determine this question, who believe in

a pure democracy, who believe that the conclusions of an inflamed public mind may safely be entrusted to determine the liberties of their fellows may learn a valuable lesson from a recent occurrence in Canada.

Freedom of speech is a cherished privilege. When this freedom is so exercised as to become slanderous or to provoke public disturbance, it approaches the status of a menace.

The *Axe* is a weekly paper whose editor felt privileged to print caustic statements concerning the Canadian parliament. That body did not feel that the penalty then provided by law, imprisonment during the session, was a sufficient punishment for the offense against its dignity, and not being hampered by any constitutional restriction proceeded to the enactment of a new law providing for more drastic punishment. In the meantime, the offender was lodged in jail in order that he may be available when the new law is fully enacted.

Under similar circumstance our constitutional limitation against expost facto legislation might, by those who now ask for amendments to the constitution, be regarded as a salutary safeguard.

THE ARIZONA INDUSTRIAL CONGRESS

ONE OF the latest, and perhaps the most practical, efforts looking to normal conditions, i.e., conditions in which the producer may find a profitable market without too great a burden on the consumer, is being conducted by the Arizona Industrial Congress.

The mine has always been the pioneer of western development. It has made possible the building of railways into otherwise inaccessible regions—it has made a home market for farm produce at profitable prices, and also has furnished to the nation those metals and minerals essential to its industrial prosperity.

In the days of small mining operations the local farm product went directly to the mine—later to the neighborhood store and still later as the mining operation grew in magnitude, where mine purchases were on a larger scale, the local product was forced to larger marketing centers, there to be repacked, classified and returned to the mine with the additional charges of numerous middle men and going and returning freight charges. The net result of this process increased the cost of living at the mines and decreased the value of the wages paid.

Mine operators were quick to recognize this situation but seemingly helpless to remedy it.

Prosperous satisfied workmen are a distinct asset to every mining organization and any proposal which adds to the value of the wages paid without adding to the cost of production adds to the number of men who may be profitably employed by commanding a larger market for the mine's output.

It remained for an altruistic and farsighted mining engineer, Mr. P. G. Spilsbury, now president of the Arizona Industrial Congress, to create an organization through which the mine, the farm and the business community might be brought into closer contact, each recognizing their mutual interpendence.

The cost of shipping eggs, butter, hay and other farm products to Los Angeles, there to be classified, repacked and reshipped to Arizona, was quickly discontinued. These products were prepared for market at home—the farmer got better prices and a more certain market for his product, the miner cheaper supplies, the mine operator more contented and prosperous employes and a mutual spirit of helpfulness was developed which promised great things for Arizona.

We commend this movement as one of the means through which the Cleveland Resolution of the American Mining Congress concerning Industrial Cooperation can be made effective, which resolution, after outlining conditions and commending the appointment of a Committee on Industrial Relations, concludes as follows:

"And be it further resolved, That employers and employes throughout the country be urged to cooperate in a general movement which shall have for its ultimate accomplishment harmonious relations, continuous employment, fair wages, reasonable profits and the cheapest priced commodities to the consumer which these conditions will permit."

It is to the very great credit of the mining companies of Arizona that notwithstanding the depression in the copper industry they have contributed a very large part of the cost of this movement.

A NEW INFLUENCE

A RECENT TRADE association bulletin cited sixty-six factories, each employing one thousand men or more, which have in operation some form of employe representation or shop council. According to the reports of most of these factories, the expansion of the employe's sphere of influence has proved advantageous.

The industrial world will benefit tremendously when industrial cooperation is universally established; but a basis for cooperation which will be acceptable to both employers and employes must be found. This is particularly true in the mining industry, an industry that employs more than a million workers. Contentment among these workers will mean many millions of dollars not only to the industry as such but to the nation.

The antagonistic divisions between capital and labor must be swept aside by reason and common understanding if industrial contentment is to be made secure.

Employers desire substantial returns on their investments and seek to establish maximum efficiency in production. Employes desire better wages and living conditions and seek the consummation of higher wage scales and better conditions of employment through organized effort and collective bargaining. The methods pursued by both employers and employes have not accomplished the results which both have sought.

Policies affecting an enterprise concern employes as well as employers. The success of these policies is as vital to the welfare of one as to the other. In the case of both, human beings are dependent upon the prosperity of the business for their livelihood. Sound policies, cooperatively established and commonly understood, therefore will provide mutual insurance for the successful maintenance of the source of livelihood.

Since employes are concerned with the circumstances and environment surrounding their employment, which largely determine their productive capacity and efficiency, their participation in the formulation of policies affecting that employment, if properly arranged, should prove mutually advantageous.

Confidence and understanding inspire loyalty. Secrecy and aloofness engender hate. Efficiency of the highest order can not be attained until employes are encouraged in their work beyond the limit of mere mechanical action. In every instance where the elements of personal interest and satisfaction found in worthy accomplishment control the efforts of workers, employers are benefited.

Where employes, by reason of limited knowledge, are unable to grasp a fundamental understanding of the problems of the business in which they are engaged, a campaign of education might make clear to them basic conditions affecting the business which otherwise could not be understood. A better knowledge of business prin-

ciples, greater responsibility in the formulation of business policies, closer contact with business management, and pride in meritorious accomplishment which promotes business interests, if encouraged, will point the way to permanent industrial peace.

The bonds of mutual understanding, sympathy and interest must close the gap between employers and employes; and these bonds can not be formed to strengthen the industrial structure of the nation until the managing authorities of every industrial enterprise make possible the development of plans for the establishment of a closer contact and unity with the workers.

The American Mining Congress has created a division of industrial cooperation because it believes that there is a common ground upon which every employer and employe can meet, and that this common ground is born of confidence, and sustained through a recognition of interdependence.

Efforts along the lines indicated will be fostered by the division in the hope that the agitator and malcontent will be divested of his influence in spreading false doctrines, and that there will be inspired among employes of the mining industry a closer adherence to the ideals and principles of Americanism as well as loyalty to the industry to which their abilities and skill are given.

COAL'S SELECTION OF LEADERSHIP

THACKERAY IN his autobiography of Barry Lyndon causes his eccentric character to arrive at a point where his past services are forgotten and his greatness impugned. In a mood to pity himself, the outcast philosophizes by saying that "The sharpest tools are often destroyed in performing the service for which they were designed."

The members of the coal industry are encountering some difficulty in selecting a leader. Promising men are not keen to volunteer. They are held back by the fact that past leaders of the industry have destroyed themselves. Those who have the capacity to become leaders are not willing to sacrifice themselves. It seems to them that Thackeray's bitter comment applies and hence that the industry's sharp tools have destroyed themselves in performing the service for which they were designed. Not being keen for self destruction the new sharp tools avoid the service. Before we consent to discourage the ambitious by saying that the job cannot be done at all, we want first to inquire what was the reason for the downfall of past leaders.

One gentleman tried to stabilize the coal business by storage. He failed and thereby lost his fortune, his position and his standing in the industry. He failed because he had not thought his proposal through before he tried to put it into practice, and because his plan, as devised, was not fundamentally sound.

Another gentleman rose to temporary leadership in the industry on his theory that he could supply a political answer to the big economic problem in coal. He failed because the industry itself would not subscribe to that theory, and because his political associates could not agree with him as to the soundness of his particular formula.

A third gentleman arose to prominence in the industry through his attempt to consolidate mines, and hence to form great combinations of capital. He failed because the people would not subscribe to a monopoly or even to an approach to it, and because the coal mine owners would not surrender their independence to become as hired men for large corporations.

We could go through a list of those who have enjoyed temporary leadership. We could show that each one failed for equally obvious reasons. In this survey, we would find that each one failed to reach his goal because his premise was not fundamentally sound. In brief the things he tried to do could not be done.

In one important respect these gentlemen were not failures at all. They all did an inestimable service to the industry by pointing out clearly the different directions in which remedies could not and cannot lie. They performed precisely the same service for the industry that the pioneer does for a nation. They cleared the ground of the underbrush, and made possible intelligent cultivation. They were the gentlemen who made possible the selection of the right program by the leader of coal who is yet to come. Rather than discourage, therefore, any new attempts at leadership they have pointed the way for that leader; they have shown him what not to try if he would succeed.

If we could summarize the experience of these venturesome gentlemen in a sentence it would read substantially as follows: Efforts at control of the product or the plants in the coal industry are failures until first there has been control of the coal land. To control the coal land involves some sort of a monopoly against which the people—both inside and outside the industry—have definitely set themselves. This means that past leaders have tried one of these things and have failed because they attempted to control rather than to direct the coal industry.

If that sentence encompasses the essence of our twenty-five year struggle to reduce the coal industry to order and if we now set about to fashion a new program, we know that the new must have a different motif from the old program of coal's leaders. That is to say, the conscious effort of the new leader must be to direct the industry rather than to control it. He must try to persuade the industry to follow him rather than try to dictate to it.

This analysis opens a field which, heretofore, has not been tried. It also opens a field in which a sharp tool need not destroy itself while doing the thing for which it was designed. That is, the teachers of and the leaders of thoughts among men have held their sways to the end, without impairing their influence. Instead they have steadily increased, gained followers as the essential soundness of their philosophies came to be recognized.

Before a new leader ventures, he should take seriously into account the character of his following and not ask support unless he can, by his experience, appeal to the largest number. That is, the most important group of followers is made up of the operators. The leader must have had practical experience as an operator; he must be able, from experience, to speak their peculiar language. He must have knowledge of the law that he may speak with authority to those lawyers upon whom so many operators depend. He must have had experience with money, because that is the objective of the coal business. He must have had experience in dealing with the public because unless he can interpret coal to the public he will be of little value to the industry. And, he must have had experience in public life that he may know the routine of politics with which he must deal increasingly as the years pass.

The prescription is not an ideal impossible of attainment. Such men live in the industry today. They are headed toward leadership because they have a substantial following. It remains only to be seen whether they have the patience to work hard and to wait until their clear vision of the needs of the industry are accepted. These men can spoil their opportunities by speaking too

soon in questions about which they are informed but about which their followers have, as yet, no adequate concept.

CLUTTERING INDUSTRIAL SKIES

BLUE SKY legislation and other measures of repression, enacted into law by state legislatures, are, in many instances, stifling the development of legitimate enterprises. Although these measures were designed to prevent the imposition of fraudulent schemes for robbing the public of hard-earned savings, in actual practice they serve to thwart new undertakings of a worthy character.

The mining industry is handicapped by restrictive legislation perhaps more than any other industry or business. Restraint of trade acts, blue sky laws, discriminatory methods of taxation, and numerous other regulatory measures are stifling development and expansion, and are forcing capital to seek other lines of business for profitable investment.

The Denison blue sky bill, now under consideration by a committee of Congress, is but another ill-advised measure which will, if passed, add to the difficulties already throttling the mining industry to the point of strangulation. This bill would place in the hands of some administrative authority powers which, if exercised in strict accordance with the terms of the bill, would seriously interfere with the development of the vast natural resources of the western states.

The results desired from this legislation are, of course, worthy; and the solution of the problem for which the Denison bill was drawn is one which must be carefully and thoughtfully studied. The protection of the public against fake promoters and stock-selling concerns is a paramount consideration. Legitimate mining enterprises have suffered from the lack of public confidence as the result of the frauds practiced by unscrupulous promoters, and the mining industry as a whole would benefit by any measure which would effectively prevent such frauds without, at the same time, interfering with honest efforts to secure capital, through the sale of stock or securities, for the development of newly discovered prospects or the expansion of existing operations in proved mines.

But legislation which will create new tax-consuming agencies or strengthen the arbitrary powers of existing agencies for the regulation of industrial development, and which imperils the welfare of legitimate undertakings for the development of natural resources or any other industry without affording any compensating advantages, must be viewed with alarm.

The Denison bill will directly affect mining, and will affect particularly mining enterprises in the west. The fact that dishonest promoters and grafters are quite as plentiful in other lines of business as in mining seems to have been ignored in the framing of this bill as it has been ignored in the enactment of the various state blue sky laws.

The proper enforcement of laws already on the statute books should not be neglected; but a new measure will not tend to increase the respect of either the public or the grafter for laws which are improperly or inadequately enforced. If the state and federal laws now in force simply against fraud were to be rigidly enforced against all unscrupulous promoters, profiteers, and social parasites, whether their activities involved the financing of a bank, a railroad, a real estate swindle, a chain-store system, or a mine, there would be little need for national blue sky legislation.

CAUTION IS NECESSARY

IN CHEMISTRY four stages—the mixing of the elements, the reaction, the precipitation and the deposit. The last is the thing sought from the beginning. Usually, just before the precipitation point is reached the reaction is violent. Thereafter the old elements disappear and the new product appears. It is a familiar process—one which has given unconsciously direction to our thought and hopes.

Indeed, so deep has been the impression that the temptation, when an economic discussion begins, is to assume that precisely the same process will, with precision, yield a desired result. That is, it is assumed that if you throw into some crucible—usually an inquisitional body—the labor, the competitive, the financial, the managerial and the political elements, and if you allow them for a long while to react in normal and therefore violent fashion, the point of natural precipitation will soon be reached. Thereafter you will have what you sought; namely, the solution of the coal problem. It is customary now to suppose that the new compound will bear no close relation to the nature of the elements from which it was compounded. That is labor, capital and politics and all their natural cravings will disappear and in their places will rise something which has none of the longings and aspirations of anyone of them but which is satisfactory to all. We seem to expect a state of things in which human ambition has finally come to rest and to create a condition which will react to nothing easily. In a word, we seek an economic ultimate as a result of each economic reaction. Of course economic elements can not possibly react in the same way as do the chemical elements. For one thing, they cannot unite so completely, that a new and better product will result which will so effectively conceal its component parts that they can be found only by fractionation. Also, chemistry is so exact that to yield a given result we must measure the elements and predetermine the temperature. We can't know our economics with that precision. Therefore we can't foreknow the product. We must create mixtures by guess and hope for a favorable outturn.

Coal, as is commonly known, is now in the crucible. Into it have been thrown all of the major elements—labor, capital, transportation, management, merchandising, and politics. Under heat, they are being allowed to react naturally in the hope that we may draw off as a product a coal industry in which the old contentions of the various groups have disappeared; that, we will have a new industry, on a new earth, which will express solely the enlightened public opinion of the day and hour.

It is, of course, impossible to expect any such change. We occupy a fool's paradise if we even hope for it, to say nothing of expecting it. And it is seriously to be doubted whether the new industry—assuming it could possibly come—would be welcomed by anyone upon its arrival. That is to say we get out of a chemical reaction only a new grouping of exactly what we put into it. We will get out of an economic reaction exactly the same thing. And we are hardly arrived at a stage of coal development where a fixation of its present processes is even approximately desirable. Specifically, we have done, as yet, hardly anything toward the development of a merchandising policy in coal. Having nothing which is satisfactory to put into the crucible, we would be foolish if we hoped to get an ideal product from the use of such an imperfect element. Nor are we safe if, at the point of creating the mixture, we allow anyone to devise a new merchandising policy and plan which will

be used in place of the practical selling policy of the industry.

We have not, as yet, reached a point in the relations between the miners and the operators where we know that one system is right and another system is wrong. We still are in the open forum on the whole labor question. We are willing to be shown which of several theories is best, but we are convinced that no one of them is entirely satisfactory. Seeing how unsettled are our opinions on that score, we are hardly in a position to embalm anyone of them. Nor would we be content to throw away that which exists and trust to someone to devise a new and better scheme based wholly upon an unproved theory.

In the matter of coal utilization, we have certainly not arrived at any such perfection that we would care to perpetuate any present method or program. Nor is there amongst us a genius to whom we would feel free to entrust the task of giving us a program according to which we must work in future.

In similar fashion, we might go through the long list of subjects connected with the coal industry. Invariably we would find that the seeds of growth have but been planted and barely are sprouted. The whole future of the industry is before it. In every department there is room for infinite improvement and expansion. This, itself, is a hopeful sign. That we recognize the truth is a still more hopeful sign.

The immediate danger is that there may spring up amongst us those who believe that we are too slow in arriving at perfection; who believe that they have the perfect conception in mind; and who may be tempted to express their own ideas in the form of a statutory program for the industry.

As we view it, the biggest danger ahead of the coal industry is that men will be disposed to freeze coal's present imperfections in their present imperfect form by reaching positive conclusions now as to what should be done.

An even graver danger is that we may try to put an end to some of the contentions in the industry on the theory that the contentions themselves are unwholesome. Such beliefs are not essentially sound.

COAL'S NATURAL ALLIES

NO MAN—not even such artists as Caruso and Mark Twain—ever won success alone. Every man has risen by the invaluable aid of others; most successful men have risen by the aid of many others.

No industry—not even steel or automobiles—ever won success unaided. Most of them have had the most powerful assistance.

It is doubtful if any politician, on his own personality and by his own efforts, ever won as many as 100,000 votes. We do not except even Theodore Roosevelt. Indeed, we raised our first estimate from 15,000 to 100,000 on his account.

F. S. Peabody used to say: "No man can succeed until the people want to do business with him." Alexander Revell supplemented this by: "Every man reaches a time in his life when he must have more money than his bank statement will enable him to borrow; then, he rises or falls on his record or the kindness of his friends."

The coal operators want to succeed. They want to rise out of a position of near pauperism or whining suppliance for the right, occasionally, to make a dollar, into a position of dignity and sustained prosperity. They have won everything that is necessary except the friends who will enable them to claim what they have won.

Looking over the present situation carefully and critically we must realize that on merit, coal, the commodity, stands in a very high place in America. It is admitted to be one of the most important authors of America's commanding position in the world's industry. It is known and admitted that we have outrun the world in industry mainly because we have had cheap power—an abundance of low-priced coal. It is admitted freely that coal is the foundation stone of our present industrial system, and the pontoon over which we must run to win any foreign markets. It is thus clear that coal—the commodity—has won its place in the sun. It has reached the pinnacle of industrial achievement. It has arrived.

But, while the commodity stands high, the coal men do not. The inanimate thing commands respect. The animate accompaniments have brought down condemnation upon themselves; they have failed to reach the hearts of the American people. And they failed in this one respect even when they were impoverishing themselves that the nation might flourish. In this there is something pathetic—but nothing that provokes a single word of censure.

The simple truth is that the coal operator has his natural allies but he has never sought them. He has not "made friends" because he has been too much engrossed by the frightful struggle to win coal from the earth and to win a profit from a business where the odds were 100 to 1 against them. The operators lacked the time, the opportunity and the inclination to go hunting for those who are naturally friendly because they are wrestling with similar problems. So, coal men stayed at home—clannish and unsocial—to win only the cold indifference of men of their own sort. That explains much. Happily that era in coal history is passing quickly.

Today, coal men are beginning to realize that they have more natural allies than any single industry and as many as the two great servitors—the banks and the railroads. That is to say, the coal industry is threatened today by a labor invasion from one side and by a political invasion from the other. Because, they, too, are prospectively, in the same situation, the employer of labor everywhere holds out his hand to the coal operator. Again, coal is a natural resource—a thing which once extracted never comes again. It is a liquidating, a diminishing business. But, so are gold, copper, iron, lead and zinc mines and oil wells. Coal is hounded into poverty; the cranks say that these natural riches are God given and no one should profit by their extraction. Because of the similarity of their problems, risks and dangers, all of these other operators extend their hands toward the coal producer. The carriers—water and rail—depend for 40 percent of their tonnage upon coal. Because of that tie, the railway officials extend their hands to the operators. Even the people who defy the intemperate winters of this "temperate" zone by the use of coal, want to be friendly with the source of their comfort. So, they extend their hands.

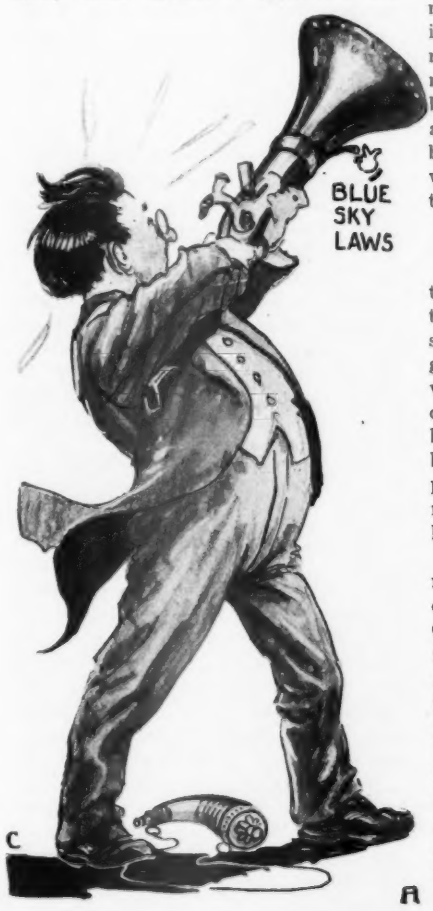
Coal operators are not Lillioms—Russian ruffians—who strike down the extended hand of friendship. The fact is that in the past they have been so worried and harried that, while walking with heads bent, they have not seen the hands. Today, the coal men, in the excess of their perplexity over crowding questions and alarms, have thrown back their heads in a gesture of despair. In doing so, they have seen the friends who are all about them. They are beginning to reach out friendly hands to meet those already extended. On that account it is a vastly better day for coal which is dawning.

FEDERAL BLUE-SKY PROPOSALS LOSE STRENGTH

Hearings on Denison Bill Before Senate Committee Develop Telling Arguments Against Measure—Witnesses Show How Enactment Would Stifle Mining Industry

THE DENISON blue-sky bill, proposing federal legislation which would stifle development operations in the mining industry, probably never will be enacted in any form showing a similarity to that which it now holds. This is the opinion of unbiased students of the situation who declare in addition that the Senate Committee on Interstate Commerce, before which the measure now is pending, holds no plan for taking action on the bill until many days have passed.

Hearings held during the past month before the Senate committee proved conclusively that the measure is vulnerable in many places to justified attacks on the part of industry based upon the proven fact that business initiative will be hampered in development of new projects if a mass of red tape has to be cut before progress can be made. The recent sessions were the first to be held on the bill since it was passed by the House last summer. Previously, only a comparatively small amount of opposition had been registered against the measure, the investment bankers and state securities commissioners mainly holding the floor with their advocacy of legislation which would probably redound to their interests if enacted.



A Reception by Protests

Reaching the Senate side of the Capitol, however, the measure found a reception of protests awaiting it. And majoring among these were the objections filed by representatives of the mining industry.

Various groups of mining men in the west had molded their expressions of opinion upon the subject, crystallized in the resolution adopted by the Cleveland convention of the American Mining Congress which emphasized the overwhelming handicap the proposed legislation would impose upon activities vital to the development of mining claims and the allied enhancement of the country's natural wealth.

This main objection on the part of the mining industry was subdivided by mining men who appeared before the committee to impress upon the senatorial minds the fact that, although efforts to banish promotors of fake securities most assuredly is sought, the efforts should be directed in some line other than one which will vitally injure legitimate activities.

Firm Opposition Registered

Concise and conclusive opposition to the bill on the part of the mining industry was voiced by James F. Callbreath, secretary of the American Mining Congress. Declaring that the bill, if enacted, would stifle prospecting and development operations of the industry, Mr. Callbreath carried his argument still further by pointing out the way in which the proposed legislation strikes deeply at the right of the citizen to determine his own legitimate actions.

Mr. Callbreath submitted to the committee a substitute measure drafted recently by a committee appointed by the Colorado Chapter of the American Mining Congress, the Colorado Metal Mining Association and the Colorado Metal Mining Fund. This proposed measure would place final judgment beyond the discretion of individuals by resting it in the hands of the judiciary system of the country. Primarily the bill is based upon a draft approved by the American Mining Congress at its convention in Denver in 1906, providing that a misstatement of facts in connection with the sale of

securities would constitute a felony and make the offender immediately liable to a prison sentence. As adopted by the Colorado mining men at their meeting held earlier in the year and presented to the committee by Mr. Callbreath, this proposed legislation would embrace authority over inter-state transactions by requiring that any person desiring to offer securities in inter-state transactions must file with a government agency in Washington a complete statement covering details of the business represented by the securities, this filing to be repeated each six months. Thus the question of fact would be determined and established by court procedure, removing the factor of final decision being made by an individual or group of individuals not subjected to restraint of a designated code.

"Will Not Accomplish Purpose"

Mr. Callbreath pointed out that the bill, in his opinion, will not accomplish the purpose for which it is offered, since it seems obvious that "fakers" will make loopholes for their activities out of the exemptions provided in the bill for certain securities from its provisions. The wholesale and enormous losses sustained by investors in this country who bought quantities of German marks early in the post-war period were presented as evidence of the mulcting possible under exemptions made by the bill. "So it is that I say the blue sky laws do not accomplish the purpose for which they are intended," declared Mr. Callbreath. "But they have accomplished and are accomplishing the effect of throttling certain industries.

"Since these blue sky laws came into effect, the mining development of the west has almost ceased. Production of all kinds of minerals has fallen off. Railroads have been discontinued and towns practically deserted.

"The prospector who goes out into the

mountains with his burro and his tools, side of bacon and sack of flour, working for many months and perhaps years, always in his own mind is a prospective millionaire. If he finally locates a claim which gives promise of being worth something, his rights are entitled to protection. Any law which prevents him from securing aid to develop that claim is against the best interests of the country.

AN ENORMOUS INVESTMENT

"The prospector is usually a poor man, without money. After his discovery of a claim he most likely returns to his old home state to find someone to help develop his claim. He immediately faces a blue sky commission which says he must have an engineer's report on the property, for which he is unable to pay.

"A mine represents an enormous investment. The poor prospector cannot make such an investment. Therefore, he quits prospecting. Prospectors have almost disappeared as a class in the west, largely because of these restrictions upon their ability to secure assistance for development of their enterprises.

"Any restrictions placed upon these men, who go out into the mountains and search for the hiding places of minerals, is against the best interests of the country."

OBJECTIONS IN TABLOID

Other objections filed against the bill included the following claims:

1. It proposes to strengthen the power of commissions without restriction, limitation, or the opportunity of appeal to determine the rights of industry, thus destroying the citizen's privilege to submit his controversy to the courts for determination.

2. It tends toward a government by men instead of a government by law.

3. It tends toward a centralization of power in the federal government and limitation of the powers of local self-government which is the bulwark of our republic.

4. It tends toward more government in business and through commissions and other tax-consuming agencies, thus adding to the already heavy burden of the taxpayer.

5. It is an unwarranted interference with the right of every citizen subject to the taxing power to carry on any legitimate business without government restriction.

Opposition along yet another line is embodied in a brief filed by A. G. Mackenzie, with the committee, singling out the fact that the measure is supported and endorsed by the Investment Bankers Association and by the Association of States Securities Commissioners. "Each of these organizations is naturally interested in the bill's enactment," the brief states, "as in the first instance, it means more business for the so-called investment bankers (who in reality are not bankers at all but brokers dealing in securities of concerns already established, in almost every instance) and in the second instance, it means additional fees and additional assurance of tenure in office for the state blue sky commissions.

"A BOLD ATTEMPT"

"It is a bald attempt to legislate against the small enterprise and the small investor. It passes without question the securities listed on the big exchanges but makes every small exchange, small community, small business man and small investor come within the proposed act. The bill makes it practically impossible for the small enterprise to start."

The brief maintains that the bill is prohibitive to small concerns and "probably was intended to be so," and states that it is the "evident intent to force all investments, as far as possible, into securities."

The hearings also brought from the mouths of those who advocate the measure the first direct testimony of the method by which they would seek to apply its provisions to the mining industry's efforts at development. Garfield S. Canright, a state securities commissioner of Wisconsin, admitted the fact that the mining industry would feel deeply the effect of the provisions if they were enacted, stating: "We recognize that this bill is going to place some limitation—it is going to place a great limitation as a matter of fact—upon the sale of securities in new mining enterprises." With no mortal able to see into the earth and tell with what success an undeveloped mining claim will meet, this limitation is unfair, the mining men replied.

OBJECTIONS ARE FORTIFIED

In outlining the evidence which securities commissioners would demand of those seeking to secure funds for development of mining claims, Mr. Canright fortified the industry's objections to the actual effects of the legislation by stressing the necessity of an engineer's report in such cases. Mining men pointed out that the average small prospector, finding a claim of apparent value after months and perhaps years of search, is not ordinarily possessed of sufficient funds to provide for the engineer's report which blue-sky legislation demands he must obtain and submit before he can proceed with efforts to secure capital. It further was pointed out that the prospector would be unlikely to go in search of funds from people outside the realm of those somewhat acquainted with the possible value of his claim and that in such cases the commissioners' detailed inquiry into his character, etc., would be somewhat superfluous. In a word, the testimony of the advocates of the measure only strengthened the contentions of those representing the interests of the prospectors whose work throughout the whole of the country's history has been primarily responsible for the discovery and development of natural resources.

W. J. Graham, of Phoenix, Ariz., a mining expert familiar with business and financial conditions generally in the west, also outlined to the committee the harm which enactment of the measure would bring to the mining industry.

Mr. Graham suggested that exemptions of certain classes of securities be extended to include the following:

"Incorporated companies that qualify, and receive permission of the commission, or commissioners, to issue treasury securities to develop a mining property located within the confines of the jurisdiction of the commission, or commissioners, of any state or territory that has enacted, or enacts, an investment company law."

SAYS LAWS CAN BE MOULDED

Blue-sky legislation could be made to cover the field of mining enterprises efficiently merely by incorporating the provision that misstatement of facts would make the promoter liable to procedure of the law, Franklin Leonard, Jr., representing the San Francisco Stock Exchange, told the committee. Representatives of other exchanges voiced the opinion that the investigations of mining enterprises made by officials of the various stock markets are able to secure the greatest possible amount of detection of attempts for promotion of fraudulent securities. Many copies of forms which those whose securities are listed must fill were included in the official report of the hearings to uphold this point.

John H. Haak, of Portland, Oregon, offered testimony drawn from his experience with mining investments, stressing the inadvisability of throttling the efforts being made in the south and west to develop mineral deposits so vital to the country's prosperity.

These paragraphs appear in the annual report of the Federal Trade Commission:

"Shortly prior to the close of the fiscal year, an inquiry into the federal and state regulations of the sales of securities was begun. These regulations include what are commonly known as the "blue sky" laws, which have been enacted by a large number of the states. An analysis of these laws is being made, their administration studied and results secured through the laws examined.

"Consideration is also being given to the activities of the Federal Government designed to restrict blue sky operations and the legislative measures proposed for federal enactment are being examined."

COAL'S LABOR FORECAST

By George H. Cushing

AFTER FIVE MONTHS of strike on the part of unionized coal miners of America, an inconclusive peace was arrived at in the Cleveland agreement. By its terms, the old contract was renewed for the remainder of the year until April first, with provisions for two different methods of adjusting the wage scale, when a new contract was to be entered into. Four months have elapsed since the signing of that contract; three months alone remain before a new contract will have to be made. The situation calls for careful consideration of everything involved, if past mistakes are to be corrected and if a new mistake is to be avoided.

Something over a year ago, the miners' union was involved in an internal political discussion, which brought much to the front the question of what the wage policy of the union was going to be. While the union was thus debating its policy and making the amount of noise which always accompanies such a debate, government officials, unfamiliar with the routine of the coal industry, came to believe that this uproar directly foreshadowed labor disputes in the coal field. They bent their energies in the direction of trying to prevent what seemed to them to be the inevitable struggle.

Thrown Into Debate

When official recognition was thus given to the internal disturbances in the miners' union, a few operators were drawn into the debate as to what was likely to happen if immediate tendencies were allowed to develop. In the struggle to prevent noise from being translated into action, untrained governmental officials precipitated a discussion between the miners and operators over concrete terms upon which a wage scale might be negotiated on the forthcoming first of April.

At the time the miners had not formulated their demands; they were merely in the throes of such formulation. The miners, having presented no demands to the operators, the latter, obviously, had made no response, and certainly no rejection to the miners' demands. The only real question before the government was: If the miners carry their threat into action, and if they present, as actual demands, the things they are talking about now, what will the operators say.

Concretely, the only thing that was under discussion was a conjecture; the only thing presented to the operators was a hypothesis based on that conjecture. Through more than a month a heated debate ensued. The operators replied that if the miners presented these demands, they would reject them. The miners being confronted by this declaration were asked whether they were going to present the demand. In the absence of a meeting of the miners' convention, or of the miners' policy committee, the officers of the union could only say what they believed the stand of the miners would be, and that was that they would resist any reduction in wage. Thus, before there was any opportunity for the miners, en masse, and the operators, en masse, to decide the all-important question for themselves, a few officials of the union and a few officials of the operators, in a private room in Washington, made the decision which was binding upon both groups. The strike came as a consequence, and as a logical development. It was this strike, prematurely arranged, which resulted in the inconclusive peace arrived at in August.

A rather dangerous precedent having been established of deciding such important questions in private conferences, the important question which now arises is whether the mistake will be duplicated this year. As one outcome of the strike last summer, Congress provided for and the President appointed the U. S. Coal Commission to make a thorough study as a fact-finding body, of the whole question of industrial relations. That commission is sitting as a fact-finding body. As such, it is instructed to inquire into past, present, and future industrial relations in all of its aspects. The injunctions of the law are specific; the commission has no option but to respond to the law in its exact terms. Following its mandates, the commission has been inquiring into not only the long time relations between the miners and the operators, but the immediate situation, and the likelihood of developments on or about the first of April. No criticism can attach to the commission, because it is obeying the letter of the law. One may have his private doubts as to the wisdom of Congress in passing such a law, but feels that the commission had to respond to it. The curious psychological effect produced by the commission's action was to raise in the minds of both miners and operators the question whether this is not a premature attempt at a solution of the mine labor difficulty, and whether this premature discussion may not predetermine the action of the miners and operators on the first of next April.

John Lewis, president of the miners' union, with characteristic foresight and directness, saw the danger and expressed himself unequivocally. He told the commission that in his opinion it was exceeding its authority when it attempted to mediate in a matter where no quarrel now exists, and that he thought any discussion premature. The latter point he emphasized by declaring that no demands have been formulated by the miners, therefore, that no demands are before the operators for consideration.

Mr. Lewis' views were echoed, in part, by some of the bituminous operators who declared it to be extremely inadvisable for either the miners or the operators to suggest any change in terms until the commission, which is sitting as a fact-finding body, has reached its findings and has given them to the public a year hence.

When the matters of immediate gossip are thus disposed of, there arises another question and a much bigger one for discussion and consideration. It is merely self-deception to take any other view of the labor situation than, substantially, the following:

Labor has continued to be paid on a war basis, while the national and inter-

"THE NATURAL DEVELOPMENT"

THE NATURAL and obvious development of the coal situation must be to re-group the country into four or five blocks, the tonnage in each of which is closely similar to each of the other," says Mr. Cushing in this story.

"As a matter of detail," he continues, "the expiration dates of agreements in the various districts will be so staggered that at no time in the future will enough of them expire concurrently to make possible a strike against the public, even though all the miners and operators involved at that time disagree."

These are the groupings for wage-making purposes which Mr. Cushing states naturally suggest themselves:

1—Pennsylvania bituminous	175,000,000 tons
2—Pennsylvania anthracite	90,000,000 tons
3—Ohio, Indiana, Illinois.....	150,000,000 tons
4—The outlying districts.....	100,000,000 tons
5—The southern non-union fields..	150,000,000 tons

national struggle has been to reduce the cost of living to a pre-war basis. President Harding aptly expressed it in his annual message to Congress, when he said that people want to be paid on the war basis, but want to buy on the pre-war basis.

A Vast Influence

The largest recognized bodies of workers are the employes of the railways and of the coal mines. Obviously, the pace set by these two groups will have a vast influence upon the wage demands presented to employers by the less important groups.

It is perhaps not too strong phrasing to say that the determination of the wage scale for the railroads and coal mines will be the determination of the wage scale for the nation; nor is it too strong to say that when the wage scale is fixed, the cost of living is predetermined.

No one is in doubt as to the meaning of the strike which occurred concurrently in the coal mines and on the railroads last summer. It was the effort of the public, generally, to reduce the cost of labor; it was the effort of labor, generally, to resist labor deflation.

In this candid discussion, it does no good to conceal another important fact in this titanic effort of labor to resist the demands of industry and the public alike, that labor be deflated. The unions did not stop at a mere strike against industry, but put that strike on such a grand scale that it amounted to a strike against the public. That is to say, when enough coal mines were allowed to remain in operation to satisfy the demands of the country, any strike against the remainder of the coal mines is a strike against the industry only. It is an effort to compel a few operators to accede to the demands of the union, the sure penalties of refusal being to close their plants and allow the business to flow to the books of competitors. In this sense, a strike against a few mines in a strike against the industry. But when so many mines are closed that the people are deprived of enough coal to keep their business moving and maintain the comfort of their homes, then the strike ceases to be against the industry and is launched against the public. There can be no doubt that so many mines were closed last year by the strike of the miners that the public was deprived of a certain percent of coal; therefore, the strike was against the public, and not merely against the industry.

In the struggle to readjust the industrial relations in the coal fields, on the railroads, and in industry, generally, the major effort is going to be, and indeed, must be in the future, to confine strikes in such a way that they are against industry, and to prevent—prohibit, if necessary—those strikes which are launched against the public.

It is now universally conceded that no law can possibly be drawn—this despite the fact that the proposal is constantly debated—which can prevent a man from quitting work if he wants to without, by the same stroke, enslaving that man. The prohibitions of our Constitution will run against any prohibition of strikes. However, when a strike becomes so general that it deprives the people of an essential service or commodity, it rises into the realms of conspiracy, against which the laws of the country have run, and have run legitimately. The thought of Congress has been veering in that direction. In the meanwhile, the operators and miners, both wishing to avoid the necessity of statutes on the subject—seeing that a statute always does more than it sets out to accomplish—are trying to compose their own disputes in such a way as to make the enactment of such a law unnecessary.

One group of operators, for example, wants to revive the old central competitive field with, perhaps, new elements included within it. That is to say, it is hardly likely that Western Pennsylvania, having no longer any common cause with Ohio, Indiana and Illinois, will allow itself to be included in a group with them. Its western market is now devoted to specialized lines of demand. Its big market has an eastern face. Also surrounded, as it is, by non-union fields with which it is in active competition, it feels that it is more in need of conforming its condition to theirs than to the unionized condition of the states with which it has heretofore been in combination. It is hardly likely that Western Pennsylvania will feel comfortable in the future in a central competitive field. Those who favor the central competitive district and who want to include in it closely competitive units are disposed to substitute the unionized fields of West Virginia and Eastern Kentucky in the combination with Ohio, Indiana and Illinois.

A New Idea

Then a new idea has come out of the so-called outlying districts. They have always rested uneasily under a condition where a basing rate, named in four states, automatically predetermined their own rate, even though their own fixed differentials applied. As these outlying districts have grown in importance, they have become more and more disposed to resent the fixing of their wage scales by operators in the central competitive field. To express it more concretely, as one of the operators does, when the central competitive field was established twenty-five years ago, or more, it then produced 85 percent of the bituminous coal of the nation. Because its production has not expanded so much and because the production of the outlying fields has steadily increased, the present situation is that the central competitive field produces about 35 percent of the nation's bituminous coal, whereas the so-called outlying districts produce 65 percent. So long as they remained a clear minority, the outlying districts were disposed to accept majority dictation as to their wage scale. Now that they have become clearly the major districts, they resent that dictation. They do not demand, at once, the right themselves to dictate—always the prerogative of the majority—but they do insist upon a voice in the council, which will allow them to have something to say about the basing rate, when fixed. Proceeding upon this rather broad premise, these gentlemen have proposed an ingenious scheme, which is that all operating districts shall name representatives to sit on a general wage policy committee for the industry, which committee will have the right to say which district, from time to time, shall be chosen to name the basing rate.

Recognize Firm Body

In other words, these operators recognize the existence of a nation-wide organization among the miners, which comes to a focus in a nation-wide policy committee. They demand that the operators shall organize themselves into a nation-wide body, which similarly shall come to a focus in a nation-wide policy committee.

These various suggestions, tentative as they are, point clearly in one direction. That is toward a complete new grouping of the operators for the purpose of wage scale making.

I can but believe that from this situation will evolve a new method of procedure which will be closely comparable to the establishment of a balance of power. That is, if the question is handled in the broad public spirit in which it is now discussed, the miners and operators alike will recognize that no more strikes may be called against the public, and that the demand for a labor monopoly shall be abandoned. Those two points being conceded, and the new grouping being made to conform thereto, the natural and obvious development must be to regroup the country into four or five blocks, the tonnage in each of which is closely similar to that of each of the others.

As a matter of detail, the expiration dates of agreements in the various districts will be so staggered that at no time in the future will enough of them expire concurrently to make possible a strike against the public, even though all the miners and operators involved at that time shall disagree.

PERPLEXING HAZE HANGS OVER COLORADO RIVER

Questions of Where and By Whom Power Is To Be Developed Must Be Settled To Provide Cheap Energy For Mines In Southwest—Predictions Being Made In Washington—Federal Agency Discusses Girand Case

DECISIONS VITAL to development of the power resources of the Colorado River for the mining industry of the Southwest must await the lifting of a haze of perplexity which now enshrouds the questions of where the power is to be developed and whether under private or federal control.

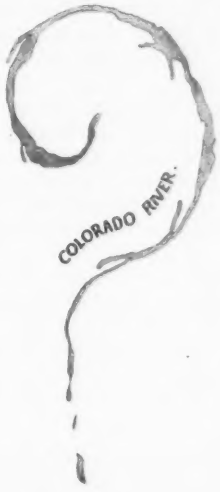
These are the predictions being made in Washington:

That a plant will be constructed at Diamond Creek under a lease in the Girand case now before the Federal Power Commission: that a large storage reservoir will be built at Lee's Ferry, in the upper portion of the river, at some more distant date: that efforts to secure enactment of proposed legislation now before Congress which would provide for a federal project will most likely be unsuccessful, but that should this legislation be approved the project would be situated on the Black Creek site. Any or all of these predictions, raised in the face of a multitude of economic, legal, physical and political variables, stand at all times in the possibility of being overthrown, however.

Of course, the recent agreement between the various states involved, now awaiting ratification by the seven state legislatures, was the first move toward ironing out the situation. The agreement, however, deals primarily with the reclamation phase of the river's development, leaving detailed consideration of the power harnessing for more distant times. Provided the seven legislatures do ratify the treaty—and there seems to be an amount of opinion in Washington that one state in the southern group may not leap toward this move—it is certain that an amity will be established under which it is possible that progress toward power development will be achieved largely through the removal of states being somewhat fearful that their neighbors would take advantage of them.

The agreement stands as a remarkable achievement, and, incidentally, as a feather in the hat of Herbert Hoover, and because of the treaty's importance, it is worthy to note that the proposals submitted by Colonel Kelly of the Federal Power Commission coincide remarkably with the ideas which the head of the Department of Commerce entertains toward development of the power resources of the river.

The report is understood to contain recommendations that the Boulder Canyon site be cast aside, with the Black Canyon location taken up in prefernece. Officials seem fairly well agreed that the Black Canyon affords the most practical and profitable site for power development. "But by whom is the power to be developed?" queries the great perplexity.



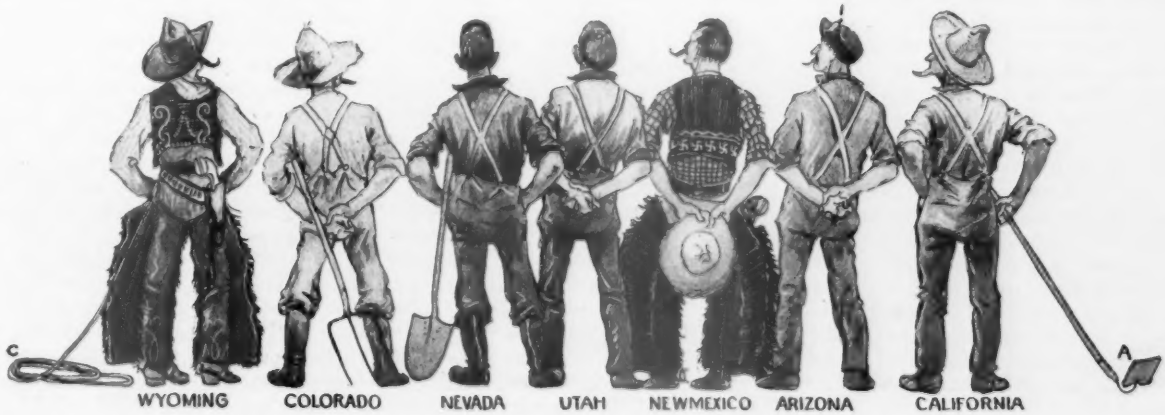
With all indications pointing against any inclination on the part of the country, through its Congress, offering large numbers of its dollars that one of its rather remote corners may be made to bloom, and with other opposition in the way, it does not seem likely that the Johnson-Swing legislation will bring forth a federally constructed dam.

Secretary Fall and Director Davis of the Reclamation Service not yet have officially renounced their avowed stand that a federal dam it shall be or nothing, or words to that effect. It is understood, however, that Mr. Davis has modulated his views somewhat in an unofficial way. With the matter in this position, the interested mind turns to see where private capital stands.

The Girand claim offers no conflict on paper with any portion of the seven-state agreement, it is being stated. While some officials in Washington profess to see a possibility that the upper states might exercise political influence to prevent the granting of a license in this case if it in any way might seem to involve their rights or set any precedent dangerous to their plans, not a great deal of serious thought is traveling in that direction.

Close students of the situation, realizing that the general industrial activity of the southwest must be built up before the demand for power, exclusive of what might go to Southern California, can reach its peak, still hold that an opening wedge must be inserted into the situation whereby the mining industry of that section of the country may find some hope of cheaper power before a comparatively distant date. They profess to see this possibility in the Girand proposal.

At any rate development of the Colo-



rado River, if for nothing but agricultural uses, will benefit the mining industry of certain western states, by increasing taxable wealth. That is, if demands for more money for state's use do not increase in greater proportion.

Here and there some chance may develop for a lower tax rate!

In its annual report, the Federal Power Commission makes the following comment:

"The application of J. B. Girand for license makes urgent the consideration by the Federal Power Commission of the Colorado development at this time. Mr. Girand certainly has strong equities, if not rights, to have his license granted. He was granted a permit by the Interior Department, which was recognized by the Federal Power Commission as giving him priority, and he was accordingly issued a preliminary permit by the Federal Power Commission to maintain that priority. He has carried out all the terms of his preliminary permit and has expended over $100,000 in securing the data necessary for his application for license. He is being aided financially by the Arizona Copper interests who are planning to use the power in their mining operations. His plans are satisfactory, and his project, while it contributes little to other interests on the river, will fit the best scheme of development (as will be shown later) and will interfere physically with no other interest on the river.

"The Secretary of the Interior has announced his opposition to granting a license to Girand. His views, as publicly expressed, are embodied in the Swing bill, H. R. 11449. The Swing bill reserves the Colorado, from the junction of the Green down, for development by the federal government and shuts out all development by private interests. Practically, its effect is to take this section of the river out of the jurisdiction of the Federal Power Commission and to place it under the jurisdiction of the Secretary of the Interior with powers very similar to those conferred upon the Federal Power Commission. The Swing bill also contains an item appropriating $70,000,000 for carrying out a flood protection project at or near Boulder Canyon and for constructing the "All American" high line canal to extend irrigation in Imperial Valley. The specific objection advanced by the Interior Department to granting the Girand license is that Girand's project, if built before the Interior Department Boulder (or Black) Canyon project, may absorb the power market to the detriment of the latter project."

RETENTION OF ASSAY OFFICES IS SOUGHT

Testimony Before Congressional Committee Seeks to Offset Efforts to Abolish Posts—Miss Mary E. O'Reilly Tells Purpose of Their Activities

PRESENTING DETAILS of interest concerning the operations of the Mint Service, Miss Mary E. O'Reilly, assistant to the director of that agency and for 18 years in its service, recently appeared before the House Appropriations Committee in connection with Treasury Department fund hearings. Explaining the necessity of retaining small assay offices in the western states, Miss O'Reilly pointed out that the function of these offices is to receive bullion and transmit it to the mints for coinage purposes and that the slight revenue received by the government from the assay of ores, amounting in many cases to less than the cost of maintaining the offices, is not a correct basis for deciding the value of the establishments. This testimony was submitted to offset the disposition held by some members of the committee to abolish these offices.

F. R. Scobey
Director of the Mint

The testimony admitted to the committee that assayers in charge of some small assay offices are generally unfamiliar with assaying, being presidential appointments, with little attention given to whether they are practical assayers.

Decrease in Shipments

An interesting development is seen in reduction of the appropriation for freight on bullion and coin from $10,000 to $5,000 for the coming year, due to the decrease in shipments between assay offices and mints.

The Philadelphia, Denver and San Francisco mints are now coining silver dollars, but the San Francisco mint will begin work on gold coinage during the present year.

Miss O'Reilly told the committee the Pittman silver purchase act will continue for probably another year, by which time the amount authorized for purchase will have been procured. The witness estimated the value of gold in the world to be nine billion dollars, of which the United States possesses more than one-third, this country's holdings showing an increase of $500,000,000 during the year. Before the war the government mints held less than one billion dollars in gold; in the New York office alone last year, two billion dollars worth of gold had been accumulated.

Reviewing the work of the various mints and assay offices, Miss O'Reilly stated that the New York office, receiving great quantities of foreign and domestic gold, is six months behind its refining schedule because of the vast amount of gold deposits. This year the office received $481,000,000 worth of gold as compared with $568,000,000 during the previous year.

The Salt Lake office had 106 deposits during the past year, and it was explained that if it were abolished the samples would have to go to Denver or to San Francisco. Seattle is the largest of the minor offices, receiving 1,302 deposits, valued at $3,000,000 during the past year through its handling of shipments from Alaska. It is expected that the business of this office will show an increase during the present year. The Boise office received 527 deposits compared to 360 during the previous year.

Retained by Senate

The House committee did not feel that continuation of the Deadwood office would be practicable and its closing was recommended, but it was retained by the Senate when the bill went before that body. Deposits at the Helena office increased from 100 to 350 during the past year, but the value of deposits dropped by $75,000.

MINERALS SEPARATIONS BRIEF FILED

THE MINERALS separations case which long has been pending before the Federal Trade Commission stirred for the first time in months when Attorneys Fuller and Alford of the commission submitted an extensive brief early in December in support of the commission's complaint against the alleged ore flotation monopoly of Minerals Separation, Ltd. The defendants then were allowed until December 29 to file answer, but the commission later advanced this date to January 20, after which the case will be argued.

The brief filed by the commission's attorneys sets up a strong case, alleging that the charges embraced in the action upon which the complaint is founded include almost a score of varieties of violations of the Federal Trade Commission and the Clayton acts.

FEDERAL REPORTS OUTLINE WORK FOR INDUSTRY

General Need of Additional Funds To Provide Technical Talent for Investigative Work Shown in Annual Reports Submitted by Chiefs of Agencies Whose Work Is Alligned With the Mining Industry

WHILE INDUSTRY is busy solving its problems of the present and heeding the calls of the future in its own very practical way, a group of government agencies sitting aside from the flurry of the business world are working constantly in their own various ways for the industry's benefit. In the case of the mining industry, these bodies are mainly of the investigative type, since their work most naturally deals with the solution of technical problems.

A Gauge For Results

Throughout the year these divisions of the federal government busy themselves by compiling statistics here and conducting experiments there. When the chiefs of these bureaus and departments thus closely connected with the mining industry render their annual reports at the end of each year, the industry is provided with a very practical means of determining just how much has been accomplished in its behalf.

Reports made to Congress during the past month by the chiefs of these divisions carry many interesting recommendations, include hosts of statistics indicating the extent to which the government during the past year devoted itself directly to the aid of the business world. Since the welfare of these bureaus in the present to an appreciable degree regulates the welfare of the industry during the days to come, much interest is found in those portions of the reports dealing with financial conditions and ability to cope with tasks.

Throughout most of the reports of the chiefs of the investigative bureaus performing their tasks in the interest of the mining industry is found running a note deploring inability to function in the most efficient way because of a lack of funds for the proper payment of trained scientists whose talents are so much needed. The situation in which the Bureau of Standards finds itself is probably the most negative in character in this respect of any governmental bureau, although others feel the burden in large degree. The Geological Survey, for instance, is far behind in its work of mapping the United States topographically, simply because funds to carry out a program initiated before the opening of the war are not available.

Appreciating the fact that the heads of the federal government must hold the nation's expenditures to the lowest possible sum, it is evident that these chiefs should not fall in love with a false economy which will cause them to make small cuts in the expenses of investigative bureaus at the cost of bringing down upon industry an incalculable harm in the future because campaigns of research have been neglected per force.

Generally, the reports indicate an effort to clear up the muddles that remain as heritages of the war, combined with a desire to comply with the rigors of the economy program in the hope that better days are in the offing when technical minds will be free to move as they will without having to keep in mind so incessantly the fact that all things must be pulled down to a small scale.

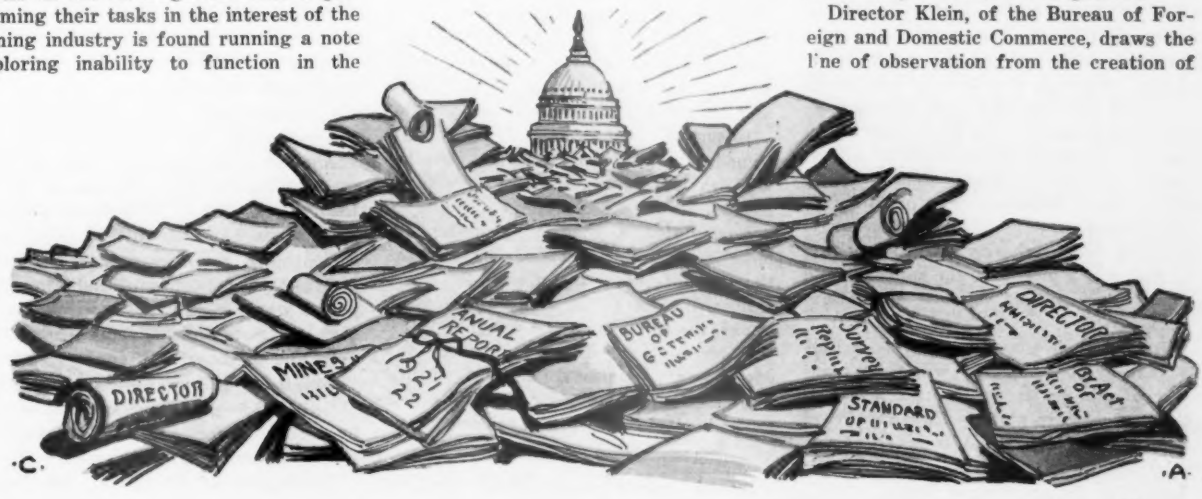
Secretary Fall in his annual report refers to the work of the Interior Department in contributing to the discovery of new oil fields, developing existing fields, increasing production of oil and by-products, prospecting for coal and opening mines in western states. He recommends that the government provide oil storage on public oil lands to secure better contracts, enable the department to withhold royalty oils from the market in periods of low prices and to sell them when there is greater demand and better prices. At present, government royalty oil bets down prices in periods of depression to the injury of the consumer. The government should throw its influence toward stabilization rather than to demoralization of the industry, the secretary emphasizes.

Vigor Is Noted

Vigorous expansion of all the functions of the Department of Commerce, close keying of its efforts to the expressed desires and needs of commerce and the trades, careful avoidance of governmental meddling in business affairs, and the saving despite all advance in accomplishment of more than three and one quarter million dollars from a single year's appropriation, were the high lights of the departmental report submitted by Secretary Herbert Hoover.

Broad and thorough investigations into the great economic problems confronting the country, in compliance with the expressed intent of the organic act creating the Department of Commerce, were reported. More liberal credits for American farmers and relief to them through readjustment of railway rates as between high priced commodities and primary produce, correction of overexpansion in the coal industry, and the development of the transportation equipment reserve to meet the peak periods of crop and commodity hauling were among the recommendations based upon the findings of these investigations.

Director Klein, of the Bureau of Foreign and Domestic Commerce, draws the line of observation from the creation of

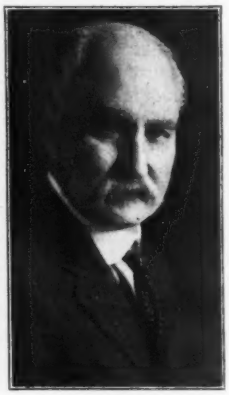


branches of that agency in which the mining industry is interested through to the present and into the possibilities of the future. The report makes obvious the part which this agency will play in promoting the welfare of the mining industry, both directly and through the indirect means of aid extended to other industries, by developing foreign fields to receive American products.

BUREAU OF MINES REPORT OF HIGH VALUE

Reflects Governments View on Vital Questions—Takes up Coal, Alaska, and Leasing Law in Detail—Agency's Work Outlined in Abstract

THE REPORT submitted by Director H. Foster Bain, of the Bureau of Mines, is one of the most unique ever drafted by the head of a governmental agency. Devoting only comparatively few lines to matters of finance and personnel, yet covering these subjects as fully as is necessary, the remainder of the report is comprised of three outlines of views gained by the bureau on the subjects of the leasing act, the coal situation and the position which Alaska's mineral resources—particularly her coal—are occupying.



Albert B. Fall

Discussing the coal strike Director Bain extends storage by the consumer or by some distributing agent operating between him and the mine as a remedy to be emphasized in efforts to cure the seasonal demand for coal, one of the admittedly greatest factors causing a lack of stabilization in the industry. The possibility of working out a use classification that will permit a wider pooling of coal is also advanced in the report, accompanied by the declaration that such pooling would relieve the pressure on docks, terminals and railway equipment.

Citing the fact that new railroad developments cannot take place save where public interest needs them, Director Bain points out that it would seem a logical development from existing practice for the Interstate Commerce Commission to exercise some authority over the opening of new coal mines since the railroads and mines already hold so close a relationship.

Indication is given in the report that a vast overdevelopment will take place in coal mining on government leases in thirteen western states within two years unless some observance is made of the relationship between possible supply and demand in the granting of leases.

Recommendation is made that the 10 percent receipts from oil royalties be diverted into a leasing fund comparable to the reclamation fund as a means of flexibly financing the bureau's leasing activities.

In that portion of the report dealing with Alaska a clear study is made of the problems of the territory which make necessity for the development of mining "especially insistent." The government railroad is pointed out as a special object for intensive development effort. The report draws a history of the Alaskan coal fields which is carried through in the case of the Matanuska deposits to the efforts made last summer to link private industry with the work in the Chickaloon mine which was not successful.

Activities Outlined

An analysis, appearing in Secretary Fall's report, covering the activities of the Bureau of Mines during the past fiscal year shows that agency accomplished the following results:

Trained 13,253 men in first aid, 1,106 in mines rescue, and 1,930 in combination first aid and mine rescue work.

Described mine safety and rescue work to 86,899 persons during the year.

Rendered assistance at 24 mine accidents—20 at coal mines and 4 at metal mines.

Conducted and assisted in conducting 26 state, local, and company first-aid meets in mining districts.

Designed and constructed for the Navy a half-hour oxygen breathing apparatus for fighting fires on shipboard and for penetrating noxious gases.

Inspected mine rescue apparatus owned by mining companies and gave advice as to its condition and repairs needed.

Formulated a code of procedure in mine rescue, and assisted an international conference in efforts to reach standardization in the use of mine rescue apparatus throughout the world.

Produced and distributed free, for educational purposes, motion picture films on subjects relating to mining and to the health and safety of miners.

Accident Reports Issued

Issued monthly statistical reports on fatal accidents at coal mines and on fatal and nonfatal accidents in metal mines, quarries, coke ovens, and metallurgical plants, in connection with mine safety work.

Visited mines, gave advice on the safety of workmen in the mines, and conducted an educational campaign in the National Safety News in cooperation with the National Safety Council.

Furthered the organization in mining districts of chapters of the Joseph A. Holmes Safety Association.

Mining engineers and surgeons made studies and submitted recommendations of metal-mine ventilation, dusts, and their physiological effects on miners in specified regions of California, Utah, Nevada, and in the Lake Superior copper region.

Advised the Five Civilized Tribes and the Choctow and Chickasaw Nations regarding efficient mining and safety methods in coal mines on their lands.

Continued to investigate explosions and fires in coal mine operators on recommendations to mine operators on causes and the methods of prevention.

Assisted the state mining commission of Maryland in the preparation of mine regulations for the state, with especial reference to coal mining.

Studied coal-mining methods throughout the country, recommending modern methods where obsolete ones were used, in order to recover a larger proportion of the coal and to increase safety in the mines.

Field Samples Tested

Tested 49 field samples of permissible explosives from 31 coal-mining companies in seven states.

Investigated possibilities of surplus military smokeless powder for industrial use.

Continued in Alaska work to promote safety and efficiency in the development of the mineral resources of the territory.

Analyzed coal purchased by the United States Government and other coal, including 5,760 samples and involving 68,740 determinations.

Cooperated with the gas industry and the American Gas Association in the study of improved processes for the manufacture and purification of illuminating gas, also of economical fuels for generators.

Continued to make analyses of mine and fuel gases of all kinds in order detect danger and increase safety in coal and metal mines, in vehicular tunnels, and in industrial plants.

Developed a portable carbon dioxide indicator for adjusting automobile carburetors by gas analysis in order to increase mileage from gasoline.

Developed a universal gas mask

(weight 8½ pounds) and a fireman's gas mask (weight 5½ pounds) to protect men against poisonous gases up to 2 or 3 percent in air.

Made a fuel survey of Buffalo, N. Y., to recommend the most economical future supply of fuel to replace natural gas.

Lignite as Substitute

Devised a grate that makes possible the substitution of low-cost lignite char for anthracite or other coal in a stove.

Established by microscopic examination the origin of coorongite, torbanite, certain kerosene shales of Australia, the bogheads of Bathage, Scotland, and other boghead coals.

Continued comprehensive research on timber preservation in metal mines, in cooperation with the United States Forestry Service, as part of the bureau's effort to conserve the nation's supply of wood.

Investigated milling methods of zinc in Missouri, Kansas, and Oklahoma and made recommendations for changes that increase the capacity of the mills and improve the recoveries.

Prepared a bulletin on aluminum and aluminum-alloy melting practice.

Began an investigation of sands for molds and cores in light alloy foundry practice in collaboration with the American Foundrymen's Association and the National Research Council.

Investigated means of utilizing tinplate scrap and old tin cans, demonstrating that a good grade of gray foundry iron and satisfactory castings can be made economically in an electric furnace.

Demonstrated that a frothy mixture is the best fire extinguisher for use in zinc-dust fires.

Continued to give information and advice to producers of radium.

In a cooperative investigation of industrial kilns, changes in method made savings in time of burning of 1 to 50 percent, and savings in fuel consumed of 10 to 38 percent, improving also the quality of the brick.

Study of Clays

Completed study of the clays and shales in the state of Washington.

Completed surveys of the soapstone and the slate industries in the United States and made reports that have benefited the industries both by increasing efficiency in mining and in preventing unwise investments.

Repaired a Texas oil well, given up as damaged beyond repair, cemented off the water, and brought back a good production.

Developed new and important applications for production curves of oil wells, indicating probable length of life of the wells and amount of future production.

Completed a study on the protection of oil-field equipment against corrosion.

Completed investigation of holding back pressure on oil wells without affecting production of wells. Research indicates possibility of saving vast quantities of gas now being wasted in producing oil.

Complete exhaustive study of Deaner and Slick oil fields, Oklahoma, and made recommendations on drilling, shutting off water in wells, and handling producing wells. Reports distributed by Bartlesville Chamber of Commerce.

Developed tight-top tanks for storage of crude oil, reducing thereby the loss of oil by evaporation. Two to four barrels of oil per day are thus saved per tank. Several oil fields have installed such tanks, saving much oil.

Compiled a manual for consumers of gas in homes, showing how to conserve the supply of natural gas.

Identified the gum-forming constituents in motor gasoline.

Gas Loss Investigations

Began a survey of transportation losses of natural gas in pipe lines, especially through leaks, in order to apply corrective measures. Several gas companies are cooperating.

Made two semi-annual surveys of motor gasoline used in the different cities of the United States; more than 100 samples collected from nine large cities and analyzed. Surveys showed good quality of gasoline on the market.

In a survey of the crude petroleums of the United States, completed and published, detailed analyses, made on a comparable basis, of samples of crude from northern Texas, Arkansas, northern Louisiana, Kansas, and Oklahoma fields, thus enabling purchasers to judge their relative value.

Compiled and distributed monthly reports of total output and stocks of refined petroleum products at the refineries of the United States. California statistics are compiled at San Francisco office, thus serving the Pacific coast more promptly.

Surveyed oil shale resources of Colorado, Utah and Indiana, and found an almost unequaled supply of fuel for the future in oil-shale deposits.

Developed accurate and reliable methods for testing oil shales and shale oils. Began a study of the refining of shale oil.

In cooperation with the Kentucky Geological Survey, made a microscopic study of Kentucky oil shales in order to correlate this structure with that of other shales and cannel coals.

Public Oil Supervised

Supervised the production of 18,236,362 barrels of oil on the public domain for the government as royalties, which amounted to $4,000,000.

Assisted in the government's work on production of a non-inflammable gas for dirigibles by performing the preliminary research necessary to the design of a larger and more efficient plant for recovering the gas.

Bought and distributed to government institutions, in or adjacent to the District of Columbia, 260,000 tons of coal—185,000 tons delivered by trucks and 75,000 in railroad cars direct to plants having railroad sidings.

H. Foster Bain

Supervised operations on government land leased for development as follows: 208,331 acres of coal lands; 1,920 acres of oil-shale land; 360 acres of phosphate land; and 26,680 acres of potash land.

Distributed 348,355 copies of free editions of publication, including 33,614 bulletins, 1,822 annual reports, 64,316 miners' circulars, 80,050 technical papers, and 168,553 miscellaneous printed documents.

FUEL OIL GAINS ON COAL, NAVAL REPORT SHOWS

EVIDENCE OF THE rapidity with which fuel oil is superceding coal in naval operations is found in the annual report of the Secretary of the Navy. The number of naval vessels using fuel oil is showing a marked increase, according to Secretary Denby's résumé of the situation. "Large reductions in all naval activities, the placing of many ships in active status and the reducing of steam for vessels kept in commission, brought the total of fuel oil used by naval ships down to approximately 6,600,000 barrels in 1921 to 5,850,000 barrels last year," the Secretary declares. "The consumption of coal, however, dropped from 704,000 tons to 456,000 tons."

Serious study of the methods of handling merchant ships in various ports of the United States has been made by the Navy Department, showing the possible effect upon fuel oil consumption. Recently American citizens in the employ of American ship operators had the opportunity of studying the methods and processes developed at the Navy Fuel Oil Testing Plant in Philadelphia. This plant develops methods for decreasing

fuel consumption in the Navy, and the information gained is equally available to the merchant marine.

Touching upon the oil storage facilities of the Navy, the report shows an improvement in facilities during the past year, but states that much remains to be done in this respect.

SURVEY'S REPORT SHOWS AID TO MINING

Wide Range of Activities Outlined—Notable Work Accomplished in Exploration of Possible Mineral and Petroleum Producing Areas—Mapping Program Continues

AN ABSTRACT of the report of Director Smith of the Geological Survey indicates the following wide range of activities of that agency during the past year: investigation of ore deposits and mining districts, of present and possible oil and gas fields, of coal fields and of deposits of other useful minerals; explorations for potash; compilation of statistics of mineral production; land classification; studies of water resources; continuation of the topographic and geologic mapping of the country, and many other branches of work more or less directly of interest to the mining industry.

Philip S. Smith

The Year's Work

In detail, these accomplishments of the survey during the past fiscal year are given in Secretary Fall's report as follows:

Made geologic surveys in 32 states and Alaska.

Continued cooperative geologic work with eight state organizations and with the Republic of Haiti and, through cooperation with governmental organizations and scientific institutions, made on request special examinations relating to the geology of Hawaii, Iceland, Canada, Peru, the Philippine Islands, Argentina, Colombia, Bolivia, Java, the Pacific islands, Mexico, New Zealand and Cuba.

Made studies of ore deposits in seven states and prepared or began to prepare 21 reports on ore deposits or mining districts.

Made field surveys and studies in 13 states with a view to determining the occurrence of oil and gas, prepared or began to prepare 32 reports on present or prospective oil and gas fields, and published maps showing oil and gas fields in Illinois, Oklahoma, Pennsylvania and Wyoming.

Indian Oil Leases

Gave advice as to the adequacy of bids received for leases of oil and gas lands in the Osage Nation.

Continued the policy of undertaking intensive study of possible oil-bearing territory in advance of commercial development, carrying on such studies in the Black Hills, Colorado and Wyoming.

Examined deposits of oil shale in four states.

Examined coal deposits in three states and prepared or began five reports on coal fields.

Made comprehensive geologic, topographic, and hydrographic studies of portions of Colorado and San Juan Rivers in Utah and Arizona, with the special object of determining the suitability of certain dam and reservoir sites.

Began the preparation of a geologic map of Arizona.

Completed studies of the radium-bearing carnotite ores and the tungsten deposits of the United States.

Cooperated with the Carnegie Institution in a study of earth movements in connection with earthquakes.

Cooperated with the United States Reclamation Service in geologic studies of dam and reservoir sites.

Made collections and examinations of fossils from 28 states for stratigraphic identification or correlation.

Continued the collection of statistics of mineral production and cooperated in this work with 18 states and the Bureau of the Census.

Fuel Reports Issued

Issued special timely reports on the production of fuels.

Continued to obtain and supply information on foreign mineral reserves.

Continued the search for potash in natural salts in Texas, collecting and examining several hundred samples and finding workable percentages of potash in a number of them.

Made 1,720 quantitative analyses of rocks and minerals and over 2,200 qualitative tests of specimens submitted mainly by persons outside of the Survey.

Continued investigations of deep-earth temperatures and of the porosity of oil and gas sands.

Continued studies of mineral deposits in Alaska.

Made geologic surveys covering 2,280 square miles and topographic surveys covering 505 square miles in Alaska.

Made topographic surveys in 21 states and Hawaii, partly in cooperation with other government organizations and with 20 states and the Territory of Hawaii.

Mapped 12,057 square miles topographically and resurveyed 1,487 square miles.

Ran 3,236 miles of levels and established in connection with them 874 permanent bench marks.

Occupied 89 triangulation stations, of which 76 were permanently marked.

Ran 2,225 miles of primary traverse and set in connection therewith 483 permanent marks.

Prepared shaded relief maps of Alaska, California, Kentucky, and southwestern Arizona, also of several quadrangles and of the area adjacent to the Denver & Rio Grande Western Railroad.

Continued the compilation of the United States portion of the international map of the world, for which maps of 46 states have now been completed.

Made more than 11,000 measurements of stream flow in the United States and Hawaii, doing part of the work in cooperation with other government organizations and with 31 states and Hawaii.

Made investigations of ground water in 10 states and Hawaii.

Analyzed 671 samples of surface and underground water.

Fuel Use Reports

Prepared monthly reports on the production of electricity and consumption of fuel by public-utility power plants and published maps of 14 states showing the location of power stations and transmission lines used in public service.

Continued investigations of the present and probable future use of surface and ground waters in connection with the classification of public lands.

Disposed of more than 25,000 cases referred to the Geological Survey for the preparation of reports thereon to be used in the administration of the public-land laws.

Made a net decrease of 459,341 acres in the area previously classified as coal land, a net increase of 268,359 acres in the area classified as phosphate land, and decreases of 3,914,988 acres in outstanding coal reserves, of 110,803 acres in outstanding petroleum reserves, and of 298,846 acres in outstanding phosphate reserves.

Acted on 7,638 applications for permit or lease rights under the mineral-lands leasing acts.

Defined the boundaries, in accordance with the known geologic structure, of five gas fields and one oil field in Wyoming and Montana.

Made plan and profile surveys of

Colorado River in Utah and Arizona and of Klamath and Trinity Rivers in California.

Made detailed studies of the possibility of developing power on rivers in Washington, Oregon, California, Idaho, Montana, Wyoming, Utah, and Colorado.

POWER-SITE RESERVES

Made a net increase of 635,523 acres in power-site reserves.

Made field studies with respect to irrigability of lands under the enlarged and stock-raising homestead acts and the Nevada ground-water reclamation act in Colorado, Arizona, Utah, and Nevada.

Designated 382,320 acres in Nevada under the ground-water reclamation act.

Included 1,160 acres in California in reservoir-site withdrawals.

Made net increase of 5,744 acres in public-water reserves, of 3,989,427 acres in enlarged-homestead designations, and of 4,778,633 acres in stock-raising homestead designations.

Published 159 reports, containing 9,594 pages and reprinted 7 reports.

Engraved and printed 70 new topographic maps and engraved wholly or in part 36 new topographic maps.

Photolithographed and printed 20 new states and other maps.

Printed 969,981 copies of new and reprinted maps.

Printed under contract for other branches of the government lithographed maps, charts, etc., in editions amounting to 2,442,227 copies.

Distributed 590,284 copies of book publications and 739,310 of map publications, of which 8,253 folios and atlases and 594,217 maps were sold.

METAL EXPERTS ARE ADDED TO TARIFF BODY

ADDITIONS HAVE been made to the metals division of the Tariff Commission to meet the press of business created by administration of the flexible provisions of the tariff law. Two men have been added to the staff, of which Paul M. Tyler is chief. The additions are F. M. Leonard, of New York, a graduate of the School of Mines of Minnesota, and W. J. Spencer, formerly of the Navy Department, a graduate of the School of Mines of Columbia University. Mr. Leonard's experience has been gained in South American fields and he is a specialist in non-ferrous metals. Mr. Spencer will devote himself to details relating to finished steel products, having done research work for the Midvale and Bethlehem companies.

Although the new act has been in force since September 21, it is understood the commission not yet has received requests for any radical changes in rates, nor have sweeping investigations been initiated.

TAX BOARD FEELS WEIGHT OF RESOURCES WORK

THE TAX Simplification Board of the Treasury Department in its annual report states that a factor involving exceptional difficulty is found in the administration of the provisions of the revenue acts which allows deduction for depletion of minerals and other natural resources. This has, the board says, the appearance of justice and comparative simplicity. What is actually involved, however, is the valuation as of March 1, 1913, or other basic date, of all the natural resources of the country which are under operation for profit. Most of this property is underground, hidden from sight.

A GREAT DIFFICULTY

In view of the great difficulty encountered in the valuation of natural resources, it is apparent, the report states, that in the time at its command the Internal Revenue Bureau cannot do better than make a very rough approximation of the value of natural resources. Either the tax payer is deprived of a part of a deduction contemplated under the law or the government fails to receive revenue to which it is entitled. Mistakes are inevitable and may run into large figures, and inequalities in the taxing of different individuals and companies are bound to occur. The report says that these considerations apply to a degree to the allowance of deductions for depreciation. Property acquired prior to March 1, 1913, is depreciable upon the basis of its value at that date, and not upon cost, and the uncertainty attaching to a valuation at a past date are encountered in connection with a large amount of property.

The board is giving careful consideration to the difficult problem of simplifying or rendering more certain and easy the calculation of the reasonable allowance for depletion of natural deposits which has been permitted as a deduction from gross income by all revenue acts since 1913.

The board says the determination of invested capital under the excess profits tax law and the valuation of natural resources have been chief obstacles in the way of completing audits of 1917 returns. With these elements established for 1917, the work of auditing returns of subsequent years will be facilitated. The audit of a 1917 return and of returns of the same taxpayer for later years are made concurrently.

BUREAU OF STANDARDS IN WAR ON WASTE

SCIENTIFIC attention in notable volume has been given to the problem of eliminating industrial wastes during the past year, says the annual report of Director Stratton of the Bureau of Standards.

Recognizing for many years that the solution of this problem depends like all fundamental industrial questions upon correct scientific and technical data, the bureau has acted as a clearing house for information. Its staff has assisted in preparing codes and specifications, and it has conducted a great number of important investigations in its laboratories, all with the object of eliminating unnecessary waste in our industries.

S. W. Stratton

The Division of Simplified Practice is working in close cooperation with American industries to eliminate useless sizes of the commonly used industrial products and is directing the attention of manufacturers to the advantages of concentrating on the sizes and types in greatest demand.

The bureau engaged in activities of anticipative and highly technical character, is doing much to aid the mining industry, as indicated by the annual report of Director Stratton. The bureau's metallurgical investigations during the past fiscal year included: study of methods of analysis for gas in metals and determination of effect of entrained gases on behavior of metals in stages of manufacture and on properties of finished products; work on thermal stresses in chilled iron and steel car wheels, which may lead to important changes in design and manufacture having an effect upon the weight of transportation equipment; study of the effect of use of titanium in the manufacture of steel rails; investigation of the effect of sulphur on steel; properties of pure alloys of iron, carbon and manganese, and tests of wrought iron.

The bureau's present program in its investigation of bearing metals has been completed. The report mentions the work of research associates in metallurgy, relating to nickel and monel metal, malleable iron embrittlement by sherardizing, magnetic estimation of iron in brassim and the hot working of ingot iron as affected by sulphur, oxygen and copper.

WAR MINERALS RELIEF DECISIONS LISTED

THE INDICATED actions were taken upon the following claims by the War Minerals Relief Commission during the month preceeding December 19:

RECOMMENDATIONS FOR AWARDS

(Approved by Secretary Fall)

Dave Vanella, Nassau, Cal., $310; Arizona & Georgia Development Co., Temple, Ga., $12,471.64; Edwin L. Freeman, Latrobe, Cal., $225; Corliss & Peacock, Grants Pass, Ore., $346; Frank L. Lasswell, Latrobe, Cal., $606.72.

(Not yet acted upon by Secretary)

George E. Brown, Roseville, Cal., $251; Washington Chrome Co., Seattle, Wash., $1,078.47; J. A. Shields, East Auburn, Cal., $186.20; Cadiz Mining Co., Denver, Colo., $3,071.55; M. A. Kelley, Newcastle, Cal., $233; William A. Heuser, Georgetown, Cal., $336; W. G. Green, Georgetown, Cal., additional award of $98; Ralph W. Goodhue, Indian Falls, Cal., $2,129; Alex Shinpaugh, Canyon City, Ore., $169; Shelton & Shinpaugh, Canyon City, Ore., $1,075.20; C. C. Hawkins, Silvies, Ore., $376; R. E. Reed, Placer, Ore., $325; Black Metals Mines, Inc., Salt Lake City, Utah, $3,165.24.

RECOMMENDATIONS FOR DISALLOWANCE

C. P. Haight, Canyon City, Ore., expenditures for purchase of property; Chandler & Haight, Canyon City, Ore., expenditures for purchase of property; Liberty Mining Co., San Francisco, Cal., expenditures for purchase of property; William O. Houck, Atlanta, Ga., no additional award; M. A. Delano, San Francisco, Cal., no additional award; Casey, Brown & Saunders, Batesville, Ark., property not of commercial importance; John F. Perkins, St. Thomas, Nev., no attempt made to produce; Red Mountain Chrome Mining Co., Eureka, Cal., expenditures for purchase of property; Charles Whitcomb & M. J. Leydig, Philipsburg, Mont., no net loss sustained; J. H. Cooke, Milwaukee, Wis., expenditures for purchase of property; C. F. Irish, Georgetown, Cal., no net loss sustained; Sixte Chaix, Latrobe, Cal., loss due to failure of one or the other parties under a contract to carry out the provisions.

F. S. Mackie, Seattle, Wash., losses sustained in the purchasing of ore; S. O. Nelson, Boise, Idaho, claimant failed to furnish necessary data in support of claims; Edward D. Cox, Leadore, Nev., no stimulation established; Julian E. Esper, Cool, Cal., property not of commercial importance; Peter Hoff and Charles Ehler, Plymouth, Cal., no net loss sustained; Walter N. Grover, Alvin M. Presby and F. H. Irish, Georgetown, Cal., variance in statements of partners; J. M. Burwell & John B. Seibert, Sanger, Cal., no additional award; S. C. Chezum & Chas. M. Warren, Seattle, Wash., project held impracticable; Alberta Lang, widow and assignee of Herbert H. Lang, San Francisco, Cal., no additional award; J. M. Blank, Canyon City, Ore., property not of commercial importance; Owen T. Smith, Courtland, Ariz., no net loss sustained.

MEASURE PROPOSES TO AID SILVER

LEGISLATION has been introduced in Congress under which the President would appoint a commission of nine members to "communicate" with such nations as may be feasible who have lessened the use of silver as money, to "use its influence toward the resumption of the use of silver in various monetary systems," and "lend its influence toward adoption of any step that may tend to stabilize the value of silver in the world's market."

The measure, which was introduced in the Senate December 27 by Senator Nicholson, Colorado, and referred to the Senate Committee on Mines and Mining, provides that after the commission shall have held such conferences and investigations as seem feasible, it shall report its findings and recommendations to the President. Provision also is made that not more than three members of the Senate or three members of the House shall serve on the commission, and that members of the body serve without compensation, with the necessary expenses to be borne by the United States.

MINE LAW MEASURE TO BE AMENDED

THE MINE LAW revision bill soon will enter upon another phase of its legislative career. Members of the House Committee on Mines and Mining, before which the measure is pending, during the past month reached the decision to consider the bill immediately after the holidays for the purpose of remolding it to conform to lines laid down by experience gathered from hearings which have been held and from masses of correspondence which have been received by the committee, the Bureau of Mines, and other interested bodies.

The proposed consideration of the bill by members of the committee does not mean that the measure stands in position to be the object of definite legislative action during this session of Congress. The situation on Capitol Hill during this short session is such that the bill will pass over into the hands of the House Mining Committee of the Sixty-eighth Congress, which convenes in March.

With the new Congress the personnel of the committee will be changed materially. It is because of this fact that members of the present committee desire to lend the full benefit of their long experience with the measure to revision efforts.

ALASKA CHAPTER ELECTS NEW OFFICERS

OFFICERS of the Alaska Chapter of the American Mining Congress were elected by that body's board of directors at a meeting held in Fairbanks, November 13, with Governor John A. Davis presiding and the following directors present: John A. Clark, John A. Davis, Paul Hopkins, Sylvester Howell, G. A. McQuarrie, George Preston, George M. Smith and Ben Thompson.

Officers for the ensuing year were nominated and duly seconded as follows, with unanimous ballot cast for their election. Governor John A. Davis; vice-governors, George Preston, George M. Smith, G. A. McQuarrie; treasurer, Paul Hopkins; secretary, M. F. Gillette; executive committee, Paul Hopkins, John A. Clark, Ben. Thompson.

REDUCTION MILLS ARE LISTED

A LIST of reduction mills in the various western states in 1920 is being published by the Bureau of Mines for the benefit of the mining industry in a revision of a list compiled in 1912 following an investigation by the Geologic Survey, which agency secured the current information. The list includes details of equipment and figures of daily capacity including those of the direct milling, tailings, cyanide, flotation and smelting plants. While gold dredges are not considered a reduction plant, in the list their number totals more than fifty.

For the purpose of economy the list for each state has been bound separately excepting Texas and Wyoming which are combined. Copies may be obtained by addressing the Director of the Bureau of Mines, Washington, D. C.

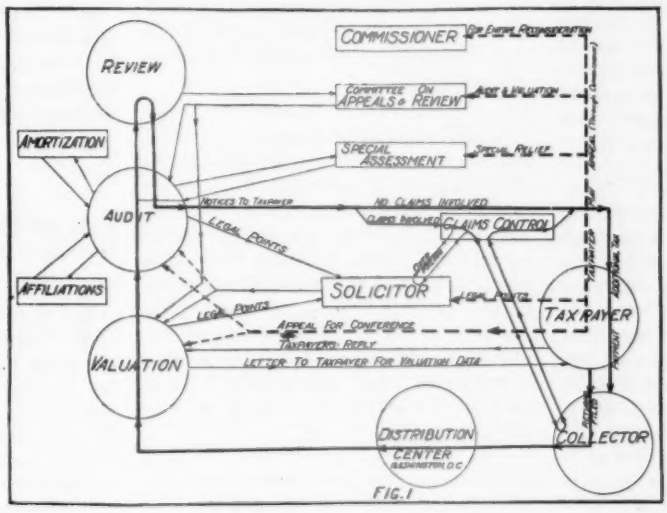
GERMAN POTASH HIGHER—German potash prices effective December 1 were approximately 145 percent higher than those of November 1, according to cable advices received by the Department of Commerce, from its Berlin representatives. Potash of 9 to 12 percent pure content is quoted at 5,611 marks per metric hundred weight; fertilizer salts 20 to 32 percent, at 12,403 marks; and potassium chloride 50 to 60 percent, at 17,538 marks. November potash deliveries were stimulated by impending increases in price, and freight rates, which increase became effective December 1. Export sale also increased and orders were received from countries which had not been previously buying.

HOW UNCLE SAM FIGURES OPERATORS' TAXES

Work Is Done By Natural Resources Division of Internal Revenue Bureau, The Federal Agency Most Intimate With The Mining Industry—Division To Remain An Entity To Cope With Complicated Task

NO OTHER branch of the federal government holds as intimate a contact with the mining industry as the Natural Resources Division. It has available not only practically all of the information possessed by the Geological Survey, Bureau of Mines, Bureau of the Census, General Land Office, and War Minerals Relief Commission, but also commands the innermost secrets of every mining operation. It is therefore important that its functions and activities should be clearly understood by everyone engaged in mining.

Albert H. Fay, chief of the Natural Resources Division, prepared a chart or "flow sheet" for the conference on mine taxation held at Cleveland, Ohio, in October. This chart, here reproduced, shows the various courses taken by tax returns from the time they are filed with the collectors until they are finally disposed of by the department.



TAX RETURN TRAVEL SHEET

Heavy line indicates the course taken by a return in which all deductions are substantiated and there are no appeals by taxpayer. Light lines show ramifications of an incomplete or complicated return. Appeals that may be taken by the taxpayer are indicated by the dotted lines

From the distribution center of the Income Tax Unit in Washington, where the returns are forwarded after being filed with local collector by the taxpayer, tax returns pass to the valuation section of the Natural Resources Division, as shown in the chart. If the return is complete and all deductions are substantiated, it passes on to the audit section. If no discrepancies are found, the return goes from the audit section to the review section. The review is final unless the case is appealed by the taxpayer.

After a case has been completed in the audit section, if additional tax liability is shown, a letter notifying the taxpayer of the proposed additional assessment is written, and the case is sent to the review section where it is retained about four days. The return and papers then are sent back to audit, where the assessment letter is dated and sent to the taxpayer. The notice goes by registered mail direct to the taxpayer, and he is given thirty days in which to show cause why the additional tax should not be assessed, or to appeal. If he thinks he has cause to protest he can appeal for reconsideration of his case. After he has appealed, he has a chance to appear in conference, but assuming that there is no appeal, a notice goes to the local collector of internal revenue, the tax is placed on the assessment list, and the taxpayer is given the regular ten days' notice in which to make payment.

There are five opportunities before assessment for the taxpayer to appeal. He may appeal for a conference on valuation, or a conference on audit questions. He may have some legal points with which he is not satisfied and the case may be referred to the solicitor of internal revenue. The solicitor's ruling will then be followed in a reaudit or revaluation in the event a change is recommended. The taxpayer may ask for special relief in cases where the division has not allowed special assessment. He may ask for a check up on the audit and valuation. The case then may be appealed to the Committee on Appeals and Review. After the committee has made its ruling the case is again referred to the audit section, if it involves a question of audit, or to the valuation section, if it involves a question of valuation. The taxpayer may appeal direct to the commissioner for entire reconsideration, if he is dissatisfied with the findings of the division or the committee.

When a return comes into the valuation section and is not complete, minor ramifications enter. A letter is addressed to the taxpayer asking for valuation data, and perhaps a dozen questions are asked. The taxpayer should reply promptly, giving the data. As soon as the additional data is assembled, it is considered and the case is passed on to the auditor. In the event that legal points arise in valuation or audit, the case is sent to the solicitor for a ruling. If invested capital cannot be determined with any degree of certainty, so that what would appear to be an unreasonable tax is imposed, the case may be closed under special assessment based on comparatives of like or similar industries. The case is then reaudited, and notice is sent to the taxpayer as indicated on the chart.

If there are involved any claims for abatement, credit or refund, they are sent to the claims control section, which, however, is outside the Natural Resources Division. Before final action is taken claims are referred to the local collector involved to ascertain if there are any outstanding liabilities against the claimants. If a claim involves $50,000 or more, it is audited and sent to the solicitor to pass upon its legality.

Mr. Fay reported at the Cleveland conference, where he presented these details of the division's organization and work, that marked progress is being made in the disposition of pending claims. The division had on hand January 1, 1922, 11,677 cases, and received between January 1 and September, 11,333 cases, making a total of 23,010 cases to be valued, audited, and determined. During the period, January to September, 1922, 14,808 cases were disposed of by the valuation section, leav-

ing a balance on hand October 1, of 8,202.

In mining cases where the question of affiliations of parent and subsidiary corporations arises, determinations are made by another division of the income tax unit; but plans are being made to bring these cases under the jurisdiction of the Natural Resources Division.

The various organizations of the mining industry have endeavored to assist the division in performing its functions in every legitimate and practical way by disseminating information to taxpayers, by supplying statistical and valuation data to the division, and by holding annual conferences for the purpose of clarifying difficult problems. E. H. Batson, deputy commissioner of internal revenue, at the Cleveland conference, mentioned particularly the cooperation of the American Mining Congress since the inception of the income tax unit.

Embraces Five Major Industries

The Natural Resources Division embraces five major natural resource industries; (1) coal mining, (2) metal mining, (3) non-metallic mining (including quarrying, (4) timber, (5) oil and gas. It will be seen, therefore, that in valuing all of the mines, timber tracts, oil and gas wells, and plants connected with the operations of this group of industries, the division has a task of great magnitude.

The staff of the division consists of 90 engineers, 150 auditors, and a corps of necessary clerks, typists and stenographers. The engineers are assigned to the work of making valuations, accerding to the particular branch of the mining industry in which they have had previous experience. The auditors are experienced mine accountants who are capable of handling complicated accounting problems.

Vast Number of Claims Handled

In the examination and adjustment of tax returns, it has been found that taxpayers more frequently make mistakes in favor of the government than in favor of themselves. The exact figures for the returns of mining companies are not available; but the annual report of the Commissioner of Internal Revenue shows that out of 167,405 claims adjusted by the income tax unit during the last fiscal year, 139,631 involving $182,371,597.88 were allowed, and 27,774 cases involving $150,107,452.72 ware rejected.

Mistakes are bound to occur, and the honesty of the average taxpayer is clearly reflected in the fact that most of the mistakes made are in favor of the government.

It is pleasing to note from the annual report of the commissioner that the Natural Resources Division will remain an entity for the purpose of coping with the specialized problems involved in its work.

SPONGE IRON STUDIES HOLD BOON FOR WEST

Bureau Of Mines Expects To Find Definite Possibilities Offered By New Metallurgical Process—Reclamation of Mine Dumps Is Aim—Report Will Soon Be Made

THE SYNTHETIC production of iron and steel for the western states and the utilization of low-grade iron deposits are being prophesied by experts who are watching progress of the sponge iron experiments being carried on by the Bureau of Mines at its Seattle, Salt Lake City and Reno stations. Indications are that these studies will develop a process of sponge iron production and subsequent production of synthetic cast iron and steel that will assure operations at costs commercially feasible.

Method of Treatment

Sponge iron is a product of the reduction of iron ore without fusion. In other words, if the oxide of iron be heated in contact with carbon to a temperature below the fusion point, the product is metallic iron plus the gangue material of the ore. The removal of the oxygen generally leaves the material in its porous form. The efforts of the studies now being made are to develop a treatment which will offer a product as high in metallic iron content as possible.

Two major methods of treatment are being studied by the bureau's experts, direct and indirect contact with the heat being under observation.

Recent experiments with the direct contact method indicate a recovery of approximately 93 percent. This figure represents an increase over 80 percent which was made possible by a comparatively minor change made in the apparatus used. Under the system being studied by the bureau sponge iron is produced by low temperature reduction of the iron oxide, with subsequent electric furnace treatment to produce synthetic pig iron at a low cost and in quantities small enough to permit operations where work on the large scale used in the ordinary process of pig iron production is not feasible.

To Study Mine Dumps

The iron content of dumps which remain after ore has been leached for copper will offer a broad field for economy under the sponge iron treatment, it is expected. Experts of the bureau soon will apply their studies to samples taken from a 300,000 ton dump of pyrite sinter, estimated to hold an iron content of 65 percent. The investigations also will cover treatment of magnetite, magnetic concentrate, pyrite calcines and bog iron ore.

At the present time the work is being concentrated upon a comparison of the indirect and direct systems of treatment. The direct system is coming especially under the observation of the Seattle station, where the experiments have been carried on for several months under the immediate supervision of Clyde E. Williams, metallurgist of the station.

Officials of the bureau intend to issue a report of the results obtained from studies of the various methods as each one of them is advanced far enough to permit of a comprehensive statement concerning its merits. A fuller report covering all phases of the experimental program will follow. It is expected that a report of the direct method soon will be issued.

COLORADO MINING MEN TO DISCUSS ISSUES

THE COLORADO Metal Mining Association and the Colorado Chapter of the American Mining Congress have joined in issuing a call for their annual meeting to be held in conjunction in Denver January 16 and 17. These sessions will form the tenth annual meeting of the mining association and the fifth annual meeting of the Colorado Chapter.

The official call of the association points out that the purpose of the convention is "to consider the various problems affecting the metal mining industry" and "to select a director for the state association from each metal mining county and to transact such other business as may in the opinion of the members be helpful in the upbuilding of the mining industry." The trend toward improved operating and economic conditions is noted.

The chapter's call declares "problems vitally affecting the metal mining industry are constantly arising at Washington, and a strong national organization is imperative to protect the interests of those engaged in metal mining. In the American Mining Congress Colorado mining men have a powerful representative at the national capital.

"To consider problems of national import affecting the metal mining industry and to take such steps concerning these questions as may seem advisable, the Colorado Chapter of the American Mining Congress extends an urgent invitation to the mining men of the state to participate in their meeting.'

TRADE RESTRAINT IS BOOMERANG, HOOVER SHOWS

Secretary of Commerce Seeks Modification of Laws Which Have Harmed the Public They Sought to Help—Legislation of this Type Responsible for "National Calamities," His Annual Report Declares

LIBERALIZATION of the restraint of trade acts is advocated by Secretary of Commerce Hoover. Holding that a vast amount of action in public interest has been lost and that great national calamities have been brought upon the country by lack of cooperative action, due to the inhibitions and uncertainties of existing laws, the Secretary of Commerce contends that the time has come when the restraint of trade acts should be limited so as to leave free all collective action which is in the interest of the public welfare.

Prolonged Coal Strike

The instability of the bituminous coal industry and the disintegration of its employers' associations by pressure under restraint of trade acts, is cited in the secretary's annual report as a case in point which illustrates the need for cooperative action. The fact that no adequate organization of operators existed which could meet and bargain with the workers, who were free from all restraint, contributed directly to the prolongation of the coal strike, according to the report. "The whole movement toward cooperative action," says Mr. Hoover, "arises from a fundamental need to which we must give heed."

He points out how many cooperative efforts in the public interest are stifled out of fear or shackled from uncertainty of the law whereby national progress along right lines is definitely impeded. "Relaxation of the acts has already been given by legislation in favor of the farmer and trades-unions," he emphasizes, "but the farmer and laborer are being even more greatly injured by the destructive shackles upon business in many directions, which produce instability of employment and increase distribution costs, than they were by the direct influence of these acts upon their own affairs.

"At the time the Sherman Act was passed the country was in the throes of growing consolidations of capital. These were consolidations of actual ownership, and the country was alive with deserved complaint of domination in business, in attempts to crush competitors with unfair practices and destructive competition. Collective action in its sense of benefit to public interest was much less known, and, at any rate, was probably not contemplated as coming within the meaning of the act. In any event there is a wide difference between the whole social conception of capital combinations against public interest and cooperative action between individuals which may be profoundly in the public interest.

Working in Public Interest

"Where the objectives of cooperation are to eliminate waste in production and distribution, to increase education as to better methods of business, to expend research in processes of production, to take collective action in policing business ethics, to maintain standards of quality, to secure adequate representation of problems before the government and other economic groups and to improve conditions of labor, to negotiate collectively with highly organized groups of labor, to prevent unemployment, to supply information equally to members and to the public upon which better judgment may be formulated in the conduct of business; then these activities are working in the public interest.

"There are some twenty-odd different functions of cooperative action which are at the same time in the interest of the different trades and the community at large. Any collective activity can be used as a cloak for conspiracy against public interest, as can any meeting of men engaged in business; but it does not follow because bricks have been used for murder that we should prohibit bricks. There is, moreover, a very wide differentiation between cooperative action open to an entire trade or region of a trade and capital combinations, because the former may be dissolved instantly without any disturbance of capital or production and does not represent increasing domination of a group of individuals in a trade, but the democratic development of a whole industry.

A Remedy Proposed

"It has often been argued that the original intent of the restraint of trade acts was not to inhibit any sort of economic collective action which was in the interest of public welfare, and that the time has come when the act should be limited so as to leave free all such action. Without entering into debate as to the difficulties of such a course it is possible to consider a narrower field of liberalization of law; that is, for the law to be liberalized to the extent that cooperative organizations generally, as distinguished from capital consolidations, should be permitted to file with some appropriate governmental agency the plan of their operations, the functions they propose to carry on, and the objectives they propose to reach; that upon approval such of these functions as did not apparently contravene public interest might be proceeded with; that upon complaint, however, either of individuals or the law officers of the government that these functions reacted against public interest, then after a hearing before some suitable tribunal the right to continue these particular functions should, if the complaints are justified, be suspended. If thereafter these functions were continued, or if it should be proved that the activities had been extended beyond the functions in the original proposals, the organization should be likewise subject to prosecution under the present acts. Parties who did not wish to avail themselves of this privilege could continue in the present status.

"All who know the situation in such matters will realize that the problems of cooperative action are mainly the concern of the smaller businesses. Such a measure as that suggested above would serve actually to protect small business and thus to maintain competition. Big business takes care of itself. Legitimate trade associations and other forms of business cooperation would be greatly stimulated along lines of public welfare if such a plan were adopted.

"It appears to me that the time has come when we should take cognizance of these necessities if we are to have a progressive economic system. Its growing complexity, its shift of objective and service, require a determination based upon a proper sense of maintenance of long-view competition, initiative, business stability, and public interest."

CANADIAN COPPER PROSPECT—Copper mining operation in the Bird Lake District in Manitoba, Canada, about eighty miles northeast of Winnipeg are in need of $10,000,000 capital necessary to develop the territory. According to reports reaching the iron and steel division of the Department of Commerce, the deposits, estimated by mining engineers to contain millions of tons of high grade copper ores, are said to assay at 20 to 27 percent copper, with a valuation placed at $81 per ton.

ARGONAUT FIRE ORIGIN STILL UNKNOWN

Special Committee Unable To Single Out Cause in Report to Governor Stephens of California—Rules Based Upon Mining Congress Suggestions Endorsed

DOUBT STILL holds the upper hand over efforts to ascertain the origin of the fire in the Argonaut mine disaster despite the long chain of intensive investigation leading to the report submitted by a special committee appointed by Governor William D. Stephens of California. "From all the evidence considered your committee is unable to arrive at a definite conclusion as to the origin of the fire which still remains in doubt," says the report submitted December 7. "Of the possible cause as previously stated, the first two, viz., incendiarism or defective electric wiring—seem to be the most acceptable."

The committee consisted of A. B. C. Dohrmann, chairman; William J. Loring, former president of the American Mining Congress and J. C. Williams.

The special committee placed its endorsement upon the findings of the Mine Fire Control of the Committee of Sixteen, headed by Mr. Loring. These recommendations were based largely upon the suggestions prepared October 12 by the committee of the American Mining Congress, of which Charles A. Mitke was chairman, and presented within the same month to the Mine Fire Control by Edwin Higgins.

Extracts from the report of Governor Stephens' committee follows:

"Origin of the Fire—The evidence given regarding the cause of the fire leads to no one definite fact. The following possibilities have all been taken into consideration:

Incendiarism,

Defective electric wiring,

Carlessness with cigar or cigarette stub, carbide lamp or candle.

"The witness Mitchell Jogo, who stepped off the skip immediately after the discovery of the fire, and remained there with the hope of being able to do something toward extinguishing it, states that while there were two sets of timber, or possibly three, burning, the larger portion of the fire seemed to be coming from the manway and spreading across the shaft from there. This would warrant the belief that the fire had started in the manway. This manway, besides carrying the ladders for the men moving up and down the shaft, when traveling without the skip, contains the electric-power wires carrying 2,400 volts, and also the electric telephone, compressed air-line, and waterpump column. If the origin of the fire was either incendiary or caused by defective electric wiring, this would be the natural place for it to start. * * *

"This committee strongly recommends that every foreman and shift boss, as well as certain other underground men, shall be thoroughly trained in the preservation of life and property under every conceivable condition that might arise underground. * * * "

PARAGRAPHS FROM THE WEST

By BURTON BUNCH

The international nature of the student personnel in western mining schools is becoming more and more a subject of comment, when it is observed as in Colorado for instance, that every state in the union is represented, and nearly all the leading foreign countries.

Renewed interest in mining in the west promises to increase the attendance at the special one-month courses for prospectors and practical mining men in the western mining schools. These courses, which are comparatively new, take in the high spots in indentification of minerals, geology, chemistry, general metallurgy, ore dressing, hydro-metallurgy, electro metallurgy assaying, and offer an unusual opportunity to the intelligent mining and mill man who has not been favored with a general mining education.

Western mining men are watching with interest the news with regard to the Denison Blue-Sky bill and in view of their action in Denver last June, and in Cleveland last October, are not going to permit the measure to become law, if possible to prevent it, because it is generally plain in the west that the bill would be a death blow to mining development.

Many newspapers in the western mining states have reprinted in full a recent article by McK. W. Kriegh, chief of the Tax Division of the American Mining Congress, on the dangers of increased taxation and the further issuing of tax exempt bonds by states and political subdivisions. The article is being used by some western organizations in correspondence to all members of western legislatures and to other public men in educational efforts to combat, in advance, possible drastic tax measures, on strictly nonpartisan lines.

Closer attention than ever before is being given by western men to the economics of the silver situation. Mining organizations in western states, including chambers of commerce in leading cities are analysing the domestic and foreign features of the question, looking to the time when all purchases possible under the Pittman act shall have been made. Such attention to the question will have resulted in a more general education than is usual when a matter so important is up for definite consideration and action.

The mining industry of the west may look for some constructive suggestions, with definite steps toward their realization following the tenth annual meeting of the Colorado Metal Mining Association and the fifth annual meeting of the Colorado Chapter, American Mining Congress, to be held jointly in Denver January 16 and 17, 1923. The Colorado organization usually starts something.

The trend of the mining industry today, the making of new mines from old abandoned producers is being emphasized in all parts of the west where revival of old properties is a leading item of news as activities increase. A comprehensive story on this subject will be presented next month.

SEES BRIGHTER FUTURE FOR COLORADO MINES

MINING CONDITIONS in Colorado are moving in favorable direction in the opinion of George A. Stahl, president of the Colorado Metal Mining Association as expressed at a recent convention of merchants and manufacturers of that state. "We believe," said Mr. Stahl, "that a modest step forward has been made during the year and will be substantially augmented next year and that in 1924 a considerably increased production will be coming from the hills.

"While we have been pretty well 'down,' we are far from being 'out,' as we refuse to admit it. We believe that in time world conditions will improve, that they have already started to do so, and are temporarily halted by strike conditions. When industry is thoroughly under way there will again be a demand for the metals which we produce, at prices which will afford a profit to the producer. In each camp in this state some bettering of conditions in the cost of supplies, and in rates of treatment and transportation for our ores are showing, and in consequence some new development work has been started, and more is being planned."

Mr. Stahl emphasized the fact that a substantial amount of development work will be necessary in large degree before production can be resumed, due to the fact that when operations were greatly curtailed or shut down completely, consequent upon falling demand and prices, production in many instances continued so long as marketable grades of ore could be produced, while no new development work was undertaken.

INTERIOR DEPARTMENT FUNDS BEFORE CONGRESS

Bureau of Mines Receives Increase Over Appropriation for Present Fiscal Year in Bill as Reported to House—Geological Survey's Portion Slightly Reduced—Both Agencies Scheduled for Less than Their Estimates Asked

URGED ALONG by efforts to clean the congressional slate so that a special session will not be necessary, bills carrying appropriations for the various government departments are making speedy progress through legislative channels. Most interesting of these to the mining industry is the measure providing funds for the Interior Department, since it is largely upon the amount made available for research and administrative activities that the volume of benefit gained by the industry from the department's work depends.

The Interior Department bill is traveling in the wake of five or six other similar measures, but most of these are well out of the way. It was reported to the House by the appropriations committee of that body December 22, and leaders expected it to pass through to the Senate speedily and in practically the same form it held when reported.

The Bureau of Mines is given $1,727,700 in the bill to cover its expenditures during the fiscal year commencing July 1 next, this amount indicating an increase of $146,800 over the appropriation provided for the current year, but $55,000 less than the estimates submitted.

The bill provides $1,439,690 for the Geological Survey, a decrease of $11,250 from the amount appropriated for the current year and a decrease of $136,400 from the estimates.

The appropriation for the Bureau of Mines is divided as follows:

General expenses, $78,700, increase $1,800; mine accidents, $393,000, increase $15,000; mine rescue cars, $211,000, no change; testing fuel, $136,000, the same as this year but $10,000 less than the estimates; mineral mining investigations, $125,000, no change; oil, oil shale and gas and supervision of coal and mineral leases, $485,000, which is $45,000 less than the estimates; experiment stations, $175,000, increase $5,000; care of buildings, Pittsburgh, $55,000, no change; mine inspection, Alaska, $35,000, no change; purchase of land at Bruceton, Pa., $33,000, new. An appropriation of $75,000 for purchase of mine rescue cars was refused, as was also $28,000 for purchase of land adjoining the station at Pittsburgh.

The Survey's funds are designated by the bill to be apportioned among various activities in the following sums:

Topographic surveys, $324,500, decrease $500; geologic surveys, $300,000, same as this year but decrease of $51,900 from the estimates; chemica. and physical researches, $40,000, no change; reports on mineral resources, $124,250, decrease $750; investigation minerel resources, Alaska, $75,000, no change; gauging streams, $170,000, decrease $10,000; maps, $110,000, no change; classification of lands, $225,000, decrease $75,000.

For the general land office, $2,838,060 is provided, a decrease of $116,490 from this year and a decrease of $95,650 from the estimates. The principal item is $650,000 for surveying public lands, the same as this year but $49,600 less than the estimates.

For the Alaskan Railroad $1,000,000 is provided, or $260,860 less than the estimates. An appropriation of $889,140 is provided for completion of the construction and equipment of the road. An appropriation of $50,000 is provided for operation of steamers on the Yukon River and tributaries.

The total appropriation for the Interior Department is $294,215,300, which is $2,996,765 less than this year and $1,142,952 less than the estimates.

INTERNATIONAL TRIBUNAL FOR INDUSTRY

THE INTERNATIONAL Chamber of Commerce has perfected plans for establishment of a court of arbitration for settlement and adjustment of commercial disputes. Owen D. Young, of the General Electric Company, will be chairman of the American group, with other members as follows: N. D. Baker, president, Cleveland Chamber of Commerce, former Secretary of War; Irving T. Bush, New York; R. G. Rhett, banker, Charleston, S. C.; H. M. Robinson, banker, Los Angeles, chairman of the 1920 coal commission; M. J. Sanders, International Mercantile Marine, New Orleans; F. S. Snyder, Boston Chamber of Commerce; Thomas E. Wilson, Wilson & Co., Chicago; Edgar Carolan, International General Electric Company, Paris, France.

Administration of the court will be directed from headquarters at Paris, with M. P. Von Hemert, of the Dutch Chamber of Commerce in Paris, as president of the executive committee.

Persons desiring to arbitrate are required to communicate to their national committee or through an organization member of the international chamber, giving a statement of the transaction and the claims to be arbitrated. If the question is subject to arbitration, the court will send a copy to the other party requesting his statement of the case. The court will appoint one arbitrator to each case unless the parties desire two arbitrators and one umpire, or three arbitrators. The arbitration will take place in the town and country, as determined by the court. Arbitrators will render awards in 60 days, which shall be carried out by the parties affected.

TOPOGRAPHIC MAPPING PROGRAM SUFFERS

THE MINING INDUSTRY is deeply interested in completion of vital topographic surveys at the earliest date possible. It is in this connection that the Geological Survey has painfully been forced to forego activities through lack of sufficient appropriations. The annual report of the head of that agency shows that territory totaling slightly more than 40 percent of the total area of the United States had been mapped prior to June 30, 1922. Statistics compiled as of that date indicate the following percentage of areas mapped throughout the mining states of the country:

Alabama, 37; Arizona, 48.7; Arkansas, 40.3; California, 76.1; Colorado, 49.3; Idaho, 33.8; Illinois, 36; Indiana, 10; Michigan, 19.2; Minnesota, 8.7; Missouri, 55.6; Montana, 28.5; Nevada, 37.5; New Mexico, 32.9; North Dakota, 14.1; Oregon, 26.7; South Dakota, 24.6; Utah, 19.2; Washington, 46.2; Wyoming, 30.7.

Cooperation between Federal and state governments in topographical survey has been maintained in twenty states, including the following, to indicated amounts: California, $13,000; Idaho, $2,712; Missouri, $15,556; Oregon, $5,553; South Dakota, $1,960; Utah, $118; Washington, $8,421.

The report called attention to success in four major instances of the Department's efforts to undertake intensive studies of possible oil-bearing territory in advance of commercial development. In four oil fields—Mexia, Texas; Burbank, Okla.; Bellevue, La., and the Sweet Grass Hill, Mont.—geological mapping have proved the existence of oil-bearing structures prior to the subsequent extensive development.

EQUIPMENT EXPORTS SIGNIFICANT IN VOLUME

THE MINING INDUSTRY in this country has had such a phenomenal development and has offered such an immense field for the sale of mine equipment machinery that the great majority of American manufacturers of mining machinery have not given much serious consideration to the development of foreign markets. There are of course exceptions to every rule, and any one in touch with the situation is familiar with the fact that several of the largest firms specializing in mining machinery have been extremely successful in the sale of their output abroad, but the rank and file of mine equipment manufacturers have confined their attention to the domestic market.

Volume is Surprising

It will be surprising to many therefore to learn from the detailed statistics recently issued by the Machinery Division of the Bureau of Foreign and Domestic Commerce of the Department of Commerce that the total value of the sales of American mining machinery and equipment during the period from January 1 to October 1, 1922, was approximately $6,000,000. This is a considerable volume of business and is a significant item.

The industrial depression, from which happily the mining industry is now emerging, had a tremendous effect upon American export trade. Most of the great markets abroad were in a state of stagnation and this was particularly true of the markets for mine equipment and mine machinery. Great mining districts such as Mexico and Russia were still in a state of chaotic disorder. European countries had no surplus capital to invest in the development of either old or new mining enterprises and there was a lack of confidence which resulted in cancellation of orders and effectively prevented the carrying on of a normal export business. Yet in spite of these facts, as the figures indicate, there has been and continues to be a notably large volume of business in the sale of American mine machinery in foreign markets.

As a matter of fact the tables which follow do not include all of the mine equipment and supplies sold by American firms abroad. There are certain large groups of equipment machinery which are not indicated and in addition there is a considerable volume of sales of explosives which ought also to be included in a complete résumé of American exports and of mine equipment, supplies and machinery.

Exportation of Important Types of Mine Equipment and Mine Machinery January 1 to October 1, 1922

Month	Rock Drills	Pneumatic portable tools	Air compressors
January	$42,314.00	$22,390.00	$73,808.00
February	36,533.00	21,242.00	131,895.00
March	46,121.00	23,641.00	110,531.00
April	72,083.00	17,919.00	166,938.00
May	56,362.00	18,930.00	285,430.00
June	52,255.00	30,687.00	245,855.00
July	49,780.00	41,980.00	166,475.00
August	51,056.00	44,772.00	286,000.00
September	93,021.00	35,389.00	126,340.00
	$499,525.00	$256,950.00	$1,593,272.00

Exportation of Important Types of Mine Equipment and Mine Machinery March 1 to October 1, 1922

Month	Ore crushing and screening machinery	Amalgamation, flotation and other concentrating machinery	Smelting and roasting machinery	Other mining & quarrying machinery (except rock drills, mines hoists & derricks)
March	$73,166.00	$13.239.00	$31,786.00	$445,737.00
April	116,774.00	10,919.00	8,875.00	255,706.00
May	80,217.00	10,580.00	2,432.00	380,930.00
June	179,604.00	7,896.00	1,289.00	322,716.00
July	135,527.00	17,611.00	19,596.00	303,727.00
August	96,006.00	9,532.00	16,109.00	292,124.00
September	90,195.00	10,515.00	5,000.00	297,291.00
	$771,489.00	$80,292.00	$85,087.00	$2,298,231.00

Indicate Field's Importance

The figures covering the groups shown are sufficient, however, to indicate the importance of the export field for mine equipment manufacturers and to illustrate the value of a continued development of foreign markets.

A noticeable feature of the exportations of mine equipment and mine machinery is the very wide distribution of the sales. If an analysis were made of the exportations during each of the months, the fact would probably be brought out that in each month a different country held first rank as a consumer of American machines and equipment. Generally speaking the most important markets, however, for these types of machines are found in England, Mexico, Japan, Canada, Chili, Brazil, Argentina, Colombia, Ecuador and South Africa.

As an illustration of the wide distribution and diversified character of the markets to which American machinery has been moving, the following table is given indicating the three most impor-

tant markets for rock drills by months during the period covered:

Exportation of Rock Drills Indicating the Three Most Important Markets for Each Month

Month	Country	Amount
January	Mexico	$20,448
	Brit. South Africa	7,285
	Canada-Quebec	3,058
February	Mexico	9,868
	Canada-Quebec	7,108
	Brazil	4,799
March	Japan	12,837
	France	9,329
	Mexico	6,014
April	Japan	33,135
	Mexico	11,652
	British India	6,595
May	Mexico	16,976
	England	13,655
	Africa	6,814
June	France	18,744
	Japan	6,492
	Canada-Ontario	5,909
July	England	15,142
	France	12,171
	Canada-Quebec	5,997
August	Mexico	9,077
	France	6,819
	England	6,701
September	England	30,781
	Brazil	27,419
	France	10,382

The value of export trade to American industry, whether it is the exportation of mining machinery or of steel lines is the fact that this export trade acts as a balance wheel which exercises a steadying influence upon domestic production. If a manufacturer, for instance, has been able to effectively develop his connections in important mining fields overseas, it is likely that in times of depression at home the demand in some of the foreign markets will be good. Naturally, the wider the area of distribution, the less likelihood of complete stagnation. It undoubtedly would be helpful therefore to many manufacturers who have paid little attention to the foreign markets to make it a point to at least get in touch with the sources of information which will enable them to take preliminary steps towards ascertaining whether or not there is a field for the sale of their products abroad.

Performs Valuable Service

The Bureau of Foreign and Domestic Commerce, which has been so greatly enlarged under the direction of Mr. Hoover, is performing a very notable service at the present time in connection with assisting, stimulating and safeguarding the development of American trade abroad, and the industrial machinery division headed by W. H. Rastall is the section of the bureau which has as its special function development of the sale of American machinery in foreign markets. As a result of the activities of this division, the detailed segregation of the different items listed in these tables has been made, thereby giving to the manufacturer a clear-cut picture of the volume of business which is being done in different lines. The figures as sent out by the Bureau of Foreign and Domestic Commerce also lists the markets to which the products have been sold, and as the work of this division develops the figures will be presented in even greater detail.

The Manufacturers Division of the American Mining Congress is of course in close touch with all departmental activities in Washington affecting the interests of its members and will be very glad indeed to cooperate with any manufacturers in securing additional information along these lines.

LIGNITE STUDIES BROUGHT TO CLOSE

Bureau of Mines Officials Now Are Preparing Report of Activities—Domestic Problem Quite Different From That of Other Countries—Lignite Demand Heavy in Germany

FIELD STUDIES in lignite work conducted by the Bureau of Mines in cooperation with the University of North Dakota, have been brought to a close, and a report now is being prepared on this phase of the work. During the summer, contact has been maintained with the lignite work conducted by the Canadian Government at Bienfait, Saskatchewan. O. P. Hood, chief mechanical engineer of the bureau, made a survey of the lignite industry in Europe, particularly in Germany, drawing a comparison between conditions in this country and those which have so largely stimulated the mining and briquetting of brown coal abroad. The economic conditions surrounding the domestic lignite problem are quite different, and suggest that probably a different answer must be sought.

When the lignite bill was passed by Congress it was believed that only a little urging and encouragement was necessary to induce substantial individual effort to erect commercial plants. This belief seems to have been premature. The Bureau's efforts have been directed toward producing lignite char with the least possible investment for equipment, and gratifying results have been obtained.

The Canadian plant has progressed to the point where changes in mechanical equipment are deemed necessary. The great benefit which Canada will derive from a successful solution of the lignite problem has justified that Government in spending funds liberally to overcome initial difficulties met in introducing a new process.

Mr. Hood reports that the briquetting of raw lignite in this country can hardly hope to produce briquettes of the quality common in Germany, since the domestic raw material lacks the natural binder common to the German brown coals. The necessity of adding binder makes quite a different problem of briquetting American lignite.

Latest reports reaching the Commerce Department indicate an increase in the production and sales of lignite and lignite briquettes in Germany during the fiscal year 1921-1922, the rise in totals being caused mainly, of course, by reason of the diversion of Germany's coal production through reparation channels.

The annual report of the Rhenish Lignite Syndicate states that the demand for briquettes has been so heavy, particularly for the industries, that it has not been possible to provide sufficient production. Figures for the year show production of 34,776,470 metric tons of lignite and 7,543,445 metric tons of lignite briquettes as compared with 25,225,831 and 5,759,024 metric tons, respectively, during the fiscal year 1919-20.

STRIKE DUTY OF TROOPS IS REVIEWED

SUGGESTIONS made by National Guard sources that strike duty should not be required by the guard but should be imposed on state police organizations supplemental to local police are discouraged by the director of the Militia Bureau in his annual report to the Secretary of War, the point being taken that this procedure would cause the guard to forfeit the support of citizens who are rapidly learning to look upon it as an efficient agent in upholding law and preserving life and property.

The report states that this emergency duty in connection with strikes is the most disagreeable of all National Guard service. Strike duty of the guard in coal fields is reviewed in the following instances: service in the coal regions of Gallup, N. M., serving from April to June; in the Walsenburg field, Colo.; in the Pittsburgh coal fields of Crawford County, Kansas, from December 14, 1921, to February 26, 1922. Troops were also detailed in connection with disturbances in the coal mining fields along the West Virginia-Kentucky border.

COAL COMMISSION SHUNS MEDIATION

Fact-Finding Agency Will Carry on Efforts to Ward off Strike Over-Development of Industry Emphasized—Secretary Hoover Discusses Situation In Report

RECENT ACTIVITIES of the Coal Fact Finding Commission have shown that body to be engaged in efforts to avert a strike which are being carried on with care to prevent that agency being placed in the light of mediating wage-scale differences. Executive sessions have been held in which the commission has continued to exert its efforts to insure an understanding between operators and miners before expiration of the present wage pact. The increasing importance of activities calculated to avert a strike have caused the commission to allow its basic investigative work to enter into a secondary phase, the main point being to stave off the economic disorders universally admitted as certain if the country is subjected to another strike.

The commission will hold public hearings during February, at which time the issues creating differences between the miners and operators will be thoroughly analyzed.

Emphasis has been laid by the commission upon the oft-reiterated statement that the coal mining industry is overdeveloped, acknowledging that one of its chief problems consists in the building of a path to deflation of this over development, the commission says:

"How great is the present inflation of the industry cannot be stated exactly at this time but unquestionably the inflation is excessive. Estimates of the excess mine capacity range from 30 to fully 60 percent above the country's normal demand.

"How to deflate the coal industry is one of many problems before the commission and its reports may be expected to present facts bearing on this question. It seems plain enough that the industry should not be further inflated by opening new mines.

"If the public can appreciate the strength of the evidence already available on this subject of overdevelopment, refusal to invest in new coal mining ventures under present conditions will be recognized as both good business and good citizenship. It is plain enough that the country needs not more coal but more work for the coal mines we already have. One potent reason that coal is not cheaper to the consumer is that he is supporting a vast surplus of investment and capacity. The large excess capacity cannot for long lower the price, however, simply because that condition of things is wasteful."

Secretary Hoover shares in the laying of stress upon the overdevelopment of the industry. Declaring that the highly unstable functioning of the bituminous industry resulted in the worst strike in history and that the primary faults must be remedied, Secretary Hoover in his annual report states:

"Our bituminous coal fields are of enormous extent and the capital required to open new mines is comparaticely small. There are apparently over 8,000 bituminous mines with an annual capacity of about 850,000,000 tons, or about 300,000,000 beyond our present normal needs. The normal demand, if spread evenly over the year, would be about 10,000,000 tons per week. It varies actually from 7,500,000 tons to 12,000,000 tons per week at different seasons of the year. The total capacity of about 16,000,000 tons per week is 4,000,000 over the maximum demand. We need a reserve capacity for the ebb and flow of business tides, but 12,000,000 per week would give 620,000,000 tons per annum, an ample supply.

"The over-expansion of the industry is to a considerable degree due to:

"(a) Annual shortage of cars and consequent scarcity, with temporary high price levels and large profits; periodic strikes and threats of strikes creating congested demand with constant periodic strikes, high prices and profits. These high profit periods induce speculative expansion of the industry.

"(b) War demand and profits.

"(c) Two-thirds of the industry is unionized and one-third is non-union. The frozen wage over long periods in the union fields enables the non-union field to undercut wages in competitive periods and thus secure more continuous operation. There is, therefore, a constant expansion in non-union fields with increasing intermittency in union fields."

Representatives of coal consumers will be called into conference by the coal commission early in the New Year. The first will be representatives of public utilities, which are large consumers of coal, including gas, electric, and street railway companies. J. W. Lieb, chairman of the fuel committee of the public utilities association will confer with the commission January 3.

In its consideration of plans to avert a break between miners and operators in the bituminous fields over wages, the commission has obtained data in the labor problem from George J. Anderson of New York, an industrial relations counsel, who has made special studies of labor problems for industries.

The commission is receiving replies from operators to the recent wage and cost questionnaire well ahead of expectations.

COAL MINE DISASTERS ARE STUDIED

DURING THE FIRST three months since the resumption of mining following the five months' strike six explosions, killing about 185 men and injuring more than 150 others, have occurred in the bituminous mines. Director Bain, of the Bureau of Mines, in a recent statement, deals with the subject in this language:

"Coal producers have been properly striving to produce a maximum output to meet the expected heavy demands of the winter trade and to overcome the inroads which had been made in the coal reserves during the recent strike, and intensified activity in any industry increases the risk of accident. The seasonal hazards, which are greater in the coal industry during the winter months, have probably influenced the result. There has been a lessening of morale throughout the coal industry as a result of the strike, which tends towards a less careful attitude of mind. Another probable factor is the change in personnel at the mines following the strike and the shifting of miners to camps where they are not familiar with the dangers and, in places, there is a lack of that discipline which is essential to prevention of disaster whether in fighting a battle or in fighting the hazards of nature.

"In the face of these increased hazards, it is the immediate duty of each operator and each mine worker to concentrate his attention on the prevention of accidents. Unless this be done, there will be more accidents and more lives lost however much the research men may do to solve the causes of accidents and to provide methods for avoiding them.

"The letdown of morale on the part of the individual miner is indicated by a startling increase in the number of accidents caused by falls of roofs or of coal falling at the working face. The prevention of such accidents is almost wholly a matter in the hands of the individual worker. In the matter of explosions, however, there is a collective responsibility which begins with the individual whose act or carelessness is the cause of the accident and continues to the operator who permits mining conditions that allow the extension of a local explosion into one spreading through the mine."

Results gained by the Bureau from its extensive studies of coal dust explosions are outlined in Director Bain's statement and appeal in full in one of the Bureau's bulletins.

ALASKA'S MINING IN 1922 IS REVIEWED

Geological Survey Official Offers Results of Intimate Observations in Annual Report Now Being Prepared—Of High Interest In View of Volume of Consideration Which Territory And Its Resources Recently Have Awakened At Washington

Some of the important features of mining development in Alaska during 1922 are set forth in the following statement, which is abstracted from the annual report on mineral resources and production in Alaska now in preparation under the direction of Alfred H. Brooks, of the United States Geological Survey, Department of the Interior. Complete statistics of the mineral production of Alaska cannot be collected within less than four or five months after the end of the year, but meanwhile it appears desirable to publish promptly the preliminary estimates, which are believed to be within 5 percent of the actual figures.

THE rather widespread pessimism concerning the present and future prosperity of the Alaska mining industry is not hard to understand. Dazzled by the quick fortunes made during the prosperous days of bonanza mining, the public has failed to mark the steady advance of other and more permanent kinds of mining, which were not only continued during the war but which have been greatly accelerated during the last two years. The great publicity given to the failure of three of the large lode gold mines near Juneau has entirely obscured the slow but steady development of other Alaska lode properties. The marked decline in the annual output of copper since 1917, the result of the low price of that metal, has been erroneously interpreted as marking the decline of the Alaska copper-mining industry.

"Grossly Exaggerated Statements"

The public, misled by the widely circulated and grossly exaggerated statements of the extent and value of Alaska coal lands, is puzzled by the apparent lack of progress in their exploitation. It is true that the rather slight underground exploration of the best Alaska coal has thus far been rather unsatisfactory, but, on the other hand, the actual achievement of furnishing local coal to the region tributary to the Alaska Railroad is a very considerable advance, even though a reserve of export coal has not yet been developed. Many who have long heard of promising occurrences of petroleum in Alaska have wondered at the delay in its development, but drilling for oil was prohibited from 1910 to 1920, when a leasing law was enacted. Since then the surface of the oil fields has been actively explored, but there has not yet been time to start actual drilling in these distant fields.

Even Alaskans, many of whom are survivors of the days of bonanza mining, are by no means hopeful of the future. Those who have seen miners without capital grow suddenly wealthy from placer gold dug out with their own hands and who have beheld prosperous communities spring up almost over night

Scott C. Bone
Governor of Alaska

are often impatient with mining projects that can succeed only by large investments and after years of preparation.

Some erroneously assume that the revival of mining in Alaska can be assured only by the discovery of a great mineral deposit, such as a large oil pool or a rich placer field, and no doubt only such a discovery could revive quickly the former prosperity of the Territory. Alaska mines have produced nearly half a billion dollars' worth of minerals, and 97 percent of this amount has come from her deposits of gold, silver, and copper. The estimated known reserves of these metals alone, without regard to future discoveries or other minerals, such as oil and coal, are sufficient to assure a prosperous future for the mining industry. Many appear to believe that the building of the Alaska Railroad should have immediately produced a marked boom. Now that a year has passed since the railroad began to furnish transportation and cheaper fuel without causing an immediate increase of mineral output they are loud in condemning the entire project. The Government railroad, as well as the increase in the building of wagon roads has already stimulated mining, but it will be some time before the results of this work will be expressed in a notable increase in mineral production.

In spite of all despair or doubt the Alaska mining industry is advancing, not retrograding. In fact, though the value of its present product is small compared with that of the past, the industry is now on a more substantial basis than ever before. In 1922 (1) preparations for drilling were sufficiently advanced to assure the beginning of underground testing in 1923 of at least one of the Alaska petroleum fields; (2) the installation of large placer-mining plants has continued, and the work on some is so well advanced as to assure their operation in 1923; (3) the activity in gold lode development already noted for 1921 was continued in 1922; (4) the copper production was about 20 percent larger than in 1921, and there was a revival in the prospecting of copper deposits. Alaska's mining needs capital for its further development, and during the year there were encouraging signs that large mining companies were turning their attention to Alaska as a prospective field for investment.

Value of Mineral Output

The value of the mineral output of Alaska in 1922 was about $1,250,000 more than in 1921. Though this increase is due entirely to the larger output of copper, yet it reflects in some measure the improvement of the entire industry. Alaska's mineral output reached its maximum in 1916, when it had a value of more than $48,000,000. This peak of production was due almost solely to the enormous copper output caused by the war demand. Obviously a proper comparison of the mineral output of the present with the past must ignore the war period, when industrial conditions were exceptional. The average annual value of Alaska's mineral production for the five years ending in 1914 was $19,700,000; the value in 1922 was about $18,250,000. Therefore, measured by output, the Alaska mineral industry is in a fair way toward restoration of its prewar prosperity, and the development of metal mines during the year was much

more significant of the future than the actual production.

VALUE OF MINERALS PRODUCED IN ALASKA IN 1921-22

	1921	1922
Gold	$8,073,540	$7,730,000
Copper	7,354,496	9,000,000
Silver	761,085	730,000
Lead	68,279	40,000
Coal	496,394	450,000
Petroleum, marble, gypsum, platinum, etc..	250,330	300,000
	$17,004,124	$18,250,000

GOLD PLACERS

Placer mining has been done in Alaska since 1880 and has yielded gold having a total value of $230,000,000. Of this total more than $200,000,000 has been mined since 1900, when the industry received its first great stimulus by the gold output of the Nome district. Other bonanza deposits were soon discovered, and by 1906 the value of the annual output of placer gold had reached $18,600,000, and the industry employed about 8,000 men. From 1906 the annual output declined, and by 1913 its value was reduced to $10,680,000 and the number of miners to 4,700. It should be noted that this reduction (45 percent) in the value of the placer output took place before the war, and that it indicated the rapid exhaustion of the bonanza deposits. From 1914 to 1917 the average value of the annual output of placer gold was about $10,000,000, and if the general industrial conditions had remained the same and railroad and road building and development of coal and petroleum had been accelerated, the annual placer output would probably not have declined below this amount. But after 1917 the war began to affect Alaska industries seriously, and placer mining rapidly declined, reaching its minimum in 1920, when the value of the output was only $3,873,000. Since then, however, it has somewhat increased.

LOWERING OF COSTS

During the period of bonanza placer mining the cost of operation was gradually but constantly lowered by improved methods of mining, especially in gold dredging, the output of which increased in value from $20,000 in 1903 to $2,300,000 in 1913. Dredges had been built so actively before the war that, in spite of adverse conditions, they continued to increase their output, which did not reach its maximum until 1916, when its value was $2,679,000. The hard times that followed led not only to the shutting down of dredges already built, but to the abandonment of some new projects. The dredges reached their minimum output of gold in 1920, when its value was $1,130,000. This rise and decline of gold dredging before 1920 was paralleled by a similar though smaller fluctuation in hydraulic and other mechanical mining.

The passage from almost strictly manual to mechanical methods of placer mining was well under way when it was checked by the war. Had it not been thus interrupted the transition would have been more gradual, and it would not have dealt so severe a blow to the communities supportel by the returns from placer mining.

Everyone who is interested in the prosperity of Alaska, which, in the past, has been so largely built upon the returns from placer mining, will naturally ask the question whether the gold placer reserves are sufficient to support again a large industry. In 1919 an attempt was made to estimate the value of the placer gold still unmined. Such an estimate could, of course, take account of possible new discoveries; it must include only those areas of auriferous gravels that have been more or less prospected. Fine colors of gold are likely to be found in most Alaska streams, but only a few of these streams contain workable placers. A rough estimate, which includes only the auriferous gravels whose gold content is large enough to be profitably exploited by methods now used, shows that there is still about $350,000,000 worth of placer gold in the ground in Alaska. This estimate is based on very incomplete data, and its value should, therefore, not be overrated, but it at least indicates the magnitude of the true figures, and it certainly shows that the Alaska placers are by no means approaching exhaustion.

AN INSTRUCTIVE COMPARISON

In this connection, an instructive comparison may be made between the placer mining in Alaska and that in the Klondike district, in the Canadian Yukon. During the eight years of bonanza placer mining, ending about 1905, this district produced $107,000,000 in gold. It was then generally believed that the days of placer mining there were about over, but by use of hydraulic and dredging plants the district has since produced gold worth more than $70,000,000. Yet, compared with placer mining in the Klondike, placer mining in Alaska is but in its infancy.

Though the outlook for large-scale placer mining in Alaska is very encouraging, yet it can not be denied that in many districts the day of profitable small operations is rapidly passing. Where the rich placers have been mined out, as they have been in many camps, the individual operator who has little or no capital can not profitably exploit the deposits of lower grade. If such deposits are large enough, they will be worked by more economical methods, but, if not, the work on them must be abandoned. It is also clear that the operations of large companies will not support settlements that have been built up on the returns from bonanza mining. A dredge employing say 15 men may do the work of several hundred, with consequent loss to the local community. In many districts this loss will be more than offset by the business developed through lode mining or other new industries. Some settlements, however, are bound to decline and some will be entirely abandoned.

The interests of placer mining can be best served by affording cheaper transportation and fuel, a fact shown by the stimulating effect on placer mining of only one year's operation of the Alaska Railroad. The life of many of the districts in which the operations are small can be much prolonged by the building of wagon roads, which, at the same time, attract enterprises requiring large capital.

REVIEW OF PLACER MINING

About 560 Alaska placer mines, employing 1,900 men, were operated during the summer of 1922, and about 100, employing 300 men, during the previous winter. These mines produced gold to the value of $4,100,000. In 1922 a much larger number of men—about 600—were employed than have been employed for several years in the past in installing large mining plants that are as yet unproductive. For this reason, the estimated reduction of $125,000 in the value of placer gold output in 1922, as compared with 1921, is not significant. It is certain that when the plans now being installed are operated, the output of placer gold will be increased; it will be larger in 1923 than it was in 1922. Now that the means of transportation are improving, and it is becoming recognized that there are large areas of dredging ground in Alaska, this form of mining is being more widely extended. In the summer of 1922, after two years of systematic prospecting, two dredges, the largest in Alaska, were built at Nome, with 9-cubic foot buckets and 40 and 60-foot ladders. A strong company was also engaged in extensive prospecting of dredging ground in the Fairbanks district. During the summer a dredge was being taken to Gaines Creek, in the Innoko district, and another to Minook Creek, in the Rampart district, so that four new gold dredges will be installed in Alaska in 1923. In 1922, 23 dredges produced gold worth about $1,530,000; in 1921, 24 dredges produced gold worth $1,582,520. Of the 23 dredges operated in 1922, 16 were in Seward Peninsula, two each in the Iditarod and Fairbanks districts, one each in the Innoko, Mount McKinley (Upper Kuskokwim), and Yentna (Susitna) districts. The dredges

in Seward Peninsula produced about $650,000 worth of gold in 1922.

Gold Lodes

For many years the Alaska gold-lode mining industry was based almost entirely on the Treadwell properties, in the Juneau district. The profitable exploitation of the large Treadwell ore body, containing not more than $2.50 worth of gold to the ton, long ago proved that the cost of mining in Tidewater Alaska was not necessarily excessive. This very profitable venture led to the development of two other large ore bodies of the district—the Alaska Juneau and the Perseverance. The content of gold in these ores is much lower than that in the Treadwell ore, but this handicap, it was believed, could be offset by the use of cheaper methods of mining and milling. The Perseverance (Alaska Gastineau) plant was completed in 1916, and the Alaska-Juneau plant in 1917, and, therefore, at the very outset, had to contend with the adverse industrial conditions caused by the war. In addition, they encountered other difficulties, due to irregularity in the distribution of the gold in the ore body, as well as to handicaps in mining and milling. As a consequence, the Perseverance mine was finally closed in 1921, though the Alaska Juneau increased its output in 1922 over that of 1921. In 1917 the disaster at the Treadwell properties—the caving and flooding of two of the three large mines—caused the abandonment of three of the five large mines in the Juneau district, and reduced the value of the annual output of gold from $4,570,000 in 1916 to $1,600,000 in 1922. The most encouraging fact about the Alaska lode-mining industry is that the loss of output from the large Juneau gold mines has already been made up in part by the output of smaller mines in other districts. This fact is shown by the total output of lode gold in Alaska, which, in 1916, had a value of $5,900,000 and in 1922 a value of about $3,600,000. The reduction of output in 1922 in all Alaska was, therefore, only 40 percent, whereas the reduction in the Juneau district was 65 percent.

To Offset Wrong Impression

The above facts are cited because many believe that the closing of some of the Juneau mines means the end of any considerable quartz mining in Alaska, but in 1922 development and prospecting of hard rock gold deposits were active in every Alaska lode district accessible from railroad or tidewater.

Though the gold-silver deposits of the Salmon River districts are still unproductive, the outlook for profitable mining there is good. The mines in the Juneau district are being more actively developed now than they have been for several years. On Chichagof Island, in the Sitka district, one additional mine—the Hirst-Chichagof—began producing in 1922, and several other properties are being developed. The small gold mines on Prince William Sound will probably soon profit by the cheap coal furnished from the Matanuska field. The Willow Creek district, now accessible by railroad and by good roads, is making excellent

Dan A. Sutherland
Delegate from Alaska

progress in lode mining. In 1922, the value of the output from the seven small mines of the district was about $275,000; in 1921 it was $118,000, but, more important, is the fact that at last systematic underground exploration has begun. In the Fairbanks district the completion of the Alaska Railroad and the assurance of comparatively cheap fuel from Nenana coal field has stimulated lode development. Five mines and prospects produced gold to the value of about $50,000 in 1922, as compared with $38,000 in 1921. In the Fairbanks district there are at least a score of lode properties, which, under present conditions, are worthy of further exploration. The facts stated show clearly that gold quartz mining in Alaska is now increasing. Its development will be slow, for in all the districts much systematic underground work must be done before reduction plants can be profitably installed, and then only in districts that are accessible at least by wagon roads.

Silver-Lead Deposits

No marked advances were made in 1922 in the development of deposits of galena. The Mocnshine property, in the Ketchikan district, long idle, was again opened up. Work on the lodes of the Salmon River district (Portland Canal), which carry high content of silver, has already been noted. In the Kantishna district the prospecting of galena ores continued, with encouraging results, but systematic underground exploration must await the construction, already begun, of wagon roads to the Alaska Railroad. So far as now known, no galena deposits were mined in 1922 except at the Perseverance claim, in the Ruby district. The output from this property and the by-products from the Juneau mines appear to have been the source of the entire production of lead in Alaska in 1922. The silver produced in 1922, estimated at 730,000 ounces, was in part derived from this galena deposit and was in part a by-product of gold and copper mining.

Copper Mining

The production of a large output of copper in Alaska began with the opening of the Kennecott mines in 1911. In the succeeding four years the annual output averaged 25,000,000 pounds. By 1917, under the stimulus of war prices, the output had been increased to 119,854,000 pounds. In consequence of the slump in the copper market, the annual output of the metal in Alaska has gradually decreased, reaching its lowest point in 1921, when it was 57,000,000 pounds. In spite of the continued low price of copper, the output in 1922 was about 68,000,000 pounds. Alaska has now produced a total of 740,000,000 pounds of copper.

Most of the copper mined in 1922 was obtained from the three large mines of the Kennecott group, in the Chitina Valley, and from the Beatson-Bonanza mine, on Prince William Sound. In 1922, as in many other years, copper was produced also at the Rush & Brown mine, in the Ketchikan district. A small output of copper was also made from mines in the Upper Kushkokwim Valley and in some other districts. The low price of the metal has prevented the owners of many small mines from renewing operations, but there was some renewal of interest in prospecting copper lodes in 1922, notably in the Chitina Valley. The advance in the price of copper will undoubtly vivify copper mining activities in Alaska.

Coal

The mining of Alaska coal for the local market was continued in the Matanuska, Nenana and Cook Inlet fields, and in a very small way in some other places. Though only about 60,000 tons were mined, even this amount has been a great boon to some communities and mining districts. For many years the Alaska metal mining industry was handicapped by being forced to pay heavily for its fuel, no local coal being available. It is now certain that metal mining in the districts near the Alaska Railroad, as

well as those of Prince William Sound, will be directly benefited by the opening of the coal fields.

Most of the coal produced was taken from the Evan Jones mine, in the Matanuska field, and from the Healy mine, in the Nenana field. At the Evan Jones mine work was temporarily suspended in November on account of a fire, which was afterward reported to be under control. Some mining was done also at the Baxter mine, in the same field. The Healy mine was worked until August, when work was suspended because the company decided to transfer its operations to property on the east side of the Nenana, with which rail connections were made late in the fall by a three-mile spur from the Alaska Railroad. Some coal was also mined in this field by the Broad Pass Development Co.

The Naval Coal Commission in 1922 discontinued its exploratory work in the Matanuska field. Several thousand tons of coal was cleaned at the Government washery and shipped from this field in 1922 for use in a naval steaming test. This will be the first washed coal from this field to be thus tested. A small shipment for a similar test was also made from the Carbon Creek mine, in the Bering River field. The most important event of the year in the Bering River field was the extension of the tracks of the narrow-gauge railroad, which is intended to connect several of the leaseholds of coal land with Controller Bay. Pending the completion of this railroad, development work in these coal tracts has been slight.

The coal mining done during the year has relieved the most urgent need for cheaper fuel in Central Alaska, and has shown the great value of the coal for local use. The question when Alaska high-grade coal can be mined for export has not yet been settled. Much more underground exploration will have to be done to develop sufficient coal to justify the hope for an export market.

Petroleum

In August, 1922, two steamers landed equipment for drilling at Portage Bay, in the Coal Bay oil field, on Alaska Peninsula. The town of Kanatak, at the head of Portage Bay, was changed in a short time from a settlement of from 10 to 15 whites to a boom town with tents, cabins, and frame buildings numbering a hundred or more, and with a population of 150 to 200, which has been augmented by still others arriving on every boat. Several months before the oil rigs were landed all the ground for several miles from the town had been staked. Drilling is to be done on the Pearl Creek dome, 17½ miles northeast of Kanatak, by the Associated Oil Co. and the Standard Oil Co. of California. The Associated Oil Co. is equipped with two portable Star rigs and intends to use local petroleum residue as fuel. The Standard Oil Co. is equipped with a standard rig and the equipment needed for drilling to a depth of 4,000 feet. Power is to be furnished by a 75-horsepower gasoline engine.

Immediately after the arrival of the steamers, work was started on a wagon road that must cross two 1,000-foot divides, and by the middle of October this road was a little more than half completed. All hauling will be done by tractors. It is doubtless whether drilling can be started before the spring of 1923.

This preparation for drilling in the Cold Bay oil field is by far the most important event in the history of the Alaskan petroleum lands since their withdrawal from entry in 1910 and their being thrown open to leasing in 1921. Though this preparation was the only definite action taken in 1922 for drilling in the prospected though undeveloped Alaska oil lands, plans for such development in other parts of the Territory are under way, and applications for oil permits are still being filed. Test drilling in other regions will quickly follow, if it does not precede, the discovery of an oil pool in the Cold Bay field. Meanwhile, the only oil actually produced in Alaska in 1922 was that obtained from the eleven small wells on the single patented tract in the Katalla field. These wells are owned by the Chilkat Oil Co., which finds a ready local market for its product in the form of gasoline produced at its own refinery.

TREASURY HEADS AGAINST NEW TAX LAWS

See Improved Administration Methods As Best Means For Clearing State of Pending Claims, With Speedy and Correct Collections Resulting

IMPROVEMENTS in methods of administration of the federal tax laws, instead of further amendments or new legislation are recognized by Treasury officials as the most effective means for securing prompt settlement of claims and the adjustment of tax liabilities of taxpayers whose returns involve difficult problems. This attitude is reflected in the recent annual reports of the Secretary of the Treasury, the Tax Simplification Board, and the Commissioner of Internal Revenue.

No general revision of the internal revenue laws is recommended in the secretary's report and no new taxes are proposed. The Treasury head believes that deficiencies in revenue, if any, can be overcome without recourse to new taxes. The reduction of surtaxes to a maximum of not over 25 percent is recommended in order to relieve the pressure for avoidance of surtaxes and to maintain the revenues derived therefrom.

May Change Methods

Depletion allowances may be calculated in the future by methods different from those now used by the Natural Resources Division, if the Tax Simplification Board evolves a simpler plan under which the deduction for depletion of mineral deposits can be computed fairly and equitably. The board is giving careful consideration to this problem, and expects to work out basic recommendations in the near future, according to its report to Congress.

That the frequent and radical changes in the tax laws have added materially to the administrative difficulties of the bureau of internal revenue, is emphasized in the board's report. The suggestion is made that more attention should be paid to the subject of tax administration rather than that of tax legislation, as more adequate provision for administration is badly needed.

The board states that the administration of the provisions of the law relating to depletion involves exceptional difficulty, necessitating the valuation of all of the natural resources of the country which are under operation for profit. It points out that the valuation of railroad properties of the country has been under way for years—a problem which is easy as compared with the valuation problems incident to the calculation of the allowance for depletion. It also states that these considerations apply to the allowance for depreciation.

Can Keep Abreast of Work

Notwithstanding the difficulties which have been encountered, the board concludes that they are temporary, and that when problems arising under former revenue acts have been disposed of, the work of the income tax unit can be kept current. The board believes this consummation is possible through simplified tax administration rather than by new tax legislation.

The report of the commissioner of internal revenue states that the natural resources division will remain an entity so far as possible because of the specialized problems involved in its work. This division, the report states, will handle natural resource audits formerly carried on in the consolidated returns subdivision and the special assessment section, in addition to its other functions.

Samuel E. Winslow

Woofing and Warping

XIV.

Representative Samuel E. Winslow

A Series of Scrutinies Directed Toward Notable Legislative Personalities

By IRA L. SMITH

HAULING MYSELF along a lonely country road some years ago, I came upon a man parked on a rock and looking like a twin brother of Fatigue. When he unfolded his tale, I found that he at one time had been a member of the House Committee on Interstate and Foreign Commerce. "Alack," said he, "I was undone by it. I sat there for several years, under a bombardment of bills proposing everything from construction of bridges across weak-kneed rivers out west to a decree that all railroad trains must run backward to prevent farmers' cattle from getting free rides across the country on the fenders of engines."

"It proved too much for me, eventually," he continued, "and I had to give up the life. I never shall forget the day I left. Sam Winslow, chairman of the committee, says good-bye to me and then turned to listen to another flock of witnesses with double-jointed tongues giving their opinions of how far high up is.

"By the way," he inquired, "is Winslow still running that mill?" I assured him that the gentleman from Massachusetts still was at the wheel of the ten-ton committee into which the House loads masses of its legislative proposals. Then we fell to talking about Mr. Winslow.

He has a sort of reversible personality. Away from the grind of committee work, his mind seems to be at a dinner party, dressed in a tuxedo and scrambling words and laughs. Set him in his role as solon, however, and immediately his personality puts on its business suit and acts more like the property of a lawyer before the bar than anything else I can think of.

That is the tricky part of it. The Congressional Directory, that informative volume which unfolds to the lay eye the dark pasts of those who keep the Capitol dome riding atop a sea of words, states that he is a "manufacturer." The way he tosses clean-shaved questions at witnesses before his outfit and the mile-wide vision with which he peers at ponderous problems would make him out more of a jambouree of lawyer and professor.

So far as ordinary observation rambles along, there is only one thing that annexes Mr. Winslow's angora. That is for some curdled legislator, with a baby bill that is past the teething age and has no molars, to claim that the Interstate Commerce Committee is a graveyard in which youthful measures are killed in dark hours and laid away without ceremony or the knowledge of their parents. Mr. Winslow's unusually even trend of mind bares its teeth and takes exception to this sort of warble. For he long has lived next door and been friends of the creed which believes that first attention should be given to amendments and other currying of legislative processes already on the books to suit the changing needs of the nation. After that is done, the proposals that gallop forth from within the thought laboratories of creative legislators get their chances to do hand-springs in the spot-light.

Since his outfit is one of the most important among those that do the stage-setting for Congress, Mr. Winslow does not get a great deal of opportunity to galavant in the manner that is popularly attributed to the chefs who concoct our national laws. He spills comparatively few words on the floor of the House, and his chair in the meeting place of the congressional body easily might sue for divorce on the grounds of desertion, naming his seat in the committee room as co-respondent.

Politically, he is one of these Republicans that's ribbed with rocks, or however it is that they express the idea of the staunchness of New Englanders' attachment to the elephant's back. Since a whole slew of radical fish came swimming down into the political ocean out of the streams of the middle and far west, it has become quite the thing to tag folks at the Capitol with one of two labels—"reactionary" or "radical." That is unnecessary in the present instance. Anyone who would mistake Mr. Winslow for a radical would figure a bolshevist as a pillar in a stand-pat church.

Mr. Winslow reminds me of a thought that I bump into each Fourth of July: a lot of men somewhere behind the scenes spend the whole round year by putting their time and talent into the making of the swirling, blazing things the public sees. The same is true of the fireworks that are discharged into legislative skies.

ONE HUNDRED thousand additional cars are necessary to the prompt filling of orders and to avoid waste in transportation, according to the thirty-sixth annual report of the Interstate Commerce Commission. The report states that a severe shortage of freight cars still exists as the result of the inability of the carriers to give adequate service or to move either loaded or empty cars promptly on account of strike difficulties. Dealers and consumers of coal in regions remote from their sources of supply are urged by the commission to purchase or make firm contracts for that supply in season for early transportation. Failure to take this action, it is stated, will redound to the inconvenience or detriment of other regions and derangement of the orderly movement of general traffic.

By McK. W. Kriegh

Contributing Factors Cited

Deterioration of motive power, lack of efficient transportation service during the early part of the shopmen's strike, and increased demands of shippers are cited as factors which have contributed materially to the serious conditions which have affected shippers, particularly those in the South. The commission states that cooperative relations have been established with the Federal Fuel Distributor, and, acting upon his recommendations, priority in transportation and distribution has been accorded in a number of instances under authority of the coal antiprofiteering act. It is further stated that the critical nature of the fuel situation has not yet warranted the complete relaxation of the order with respect to the priority use of coal cars; but present priorities are confined to cases which are markedly of an emergency character.

Recommendations bearing upon the situation include proposals for the amendment of section 1 of the interstate commerce act providing for the punishment of any person offering or giving to an employe of a carrier subject to the act any money or thing of value with intent to influence his action or decision with respect to car service, and providing also for the punishment of the guilty employe; the amendment of the boiler inspection act to provide for increases in the number and salaries of inspectors; and the amendment of section 5 of the Interstate Commerce act so as clearly to provide whether and, if so, how voluntary consolidations may be effected pending ultimate adoption by the commission of a complete plan of consolidation.

Rate Reductions Discussed

Referring to rate reductions, particularly to the general reduction of 10 percent ordered in the 1922 reduced rates case, 68 I. C. C. 676, the commission states that serious dislocation in the relationship of rates on the various commodities transported, and in competitive and commercial situations as between different industries and localities, in the judgment of a majority of the commission, would have resulted if an attempt had been made to limit the reductions to particular commodities rather than to apply them to freight traffic in general. It is stated, however, that little opportunity has been afforded for determination of the effect of the reduced rate level upon the net earnings of the carriers because of freight congestion and other abnormal conditions which have resulted from the coal strike, the shopmen's strike and other causes.

The report states that much can be accomplished along the lines of efficiency and economy in railroad management and terminal operations; but that if the commission undertakes to go into the question of efficiency of management in a thoroughly effective way, an organization of experts would be required who would be especially qualified to investigate the numerous and complex phases of railroad management, such as shop methods, locomotive performance, road and terminal operation, maintenance of way and structures, purchasing and many others. This, it is said, would involve a large additional appropriation and would in some degree duplicate the work of the technical staff of the railroads. The commission, therefore, is not convinced that the interstate commerce act requires a study of operating efficiency upon this elaborate plan, but believes that it is up to the carriers to work out a solution of this problem.

Favorable Cooperation Reported

Cooperation between federal and state commissions is progressing favorably, according to the report. In this connection it is stated that the avoidance of harmful maladjustments of interstate and intrastate rates and fares by coordinated efforts has long been recognized as desirable, but until recently federal and state commissions have continued to perform their respective functions independently of one another to a large extent. This course has required the commission to condemn maladjustments which injuriously discriminated against interstate commerce and frequently to compel their correction by revision of the intrastate rates and fares. The cooperative program, the report states, has incidentally resulted in the making of orders by state commissions, and the consequent vacating of the federal commission's previous orders affecting intrastate freight rates in many of the state rate cases.

The commission reports that the stage in valuation of the steam railroads of the country has been reached where, except for rechecking, the inventorying of roads recently constructed, and a few minor details, the original field work has been completed. A reduction in the number of employes engaged in valuation work has been made possible by the termination of the original field work, and all forces and records of the bureau of valuation have been transferred to the central office in Washington. The data assembled is proving useful in connection with the consideration of rate cases, the plan for consolidation of the railway properties into a limited number of systems, the regulation of security issues for existing companies and for recapture of excess earnings, and to fill requisitions for valuation data made by

other branches of the federal government as well as local governments.

LIMITED FUNDS A HAMPER

Limited appropriations greatly restrict the work of the commission. The report states that the reduction of the appropriation for the valuation of the railroads more rapidly than had been planned may practically defer recovery of excess earnings under section 15a of the interstate commerce act. Reduction of the current appropriation for the bureau of accounts will retard the policing of carriers' accounts as contemplated by section 20, the revision of accounting classifications, and the prescribing of classes of property for which depreciation charges may properly be included under operating expenses. The commission also contends that more funds must be supplied to care for the disposition of pending fourth section applications, as well as to deal adequately with the subject of rules and regulations for the simplification of schedules of rates, fares, charges and classifications, which work is authorized under paragraph (3) of section 6.

In making settlements with carriers under the guaranty provisions of section 209 of the transportation act, the commission reports that consideration is not being given to the contention of carriers that allowances should be made for alleged inefficiency of labor during the guaranty period as compared with the test period. The report states that while 547 of the 667 carriers which had accepted the guaranty provisions claimed an amount approximating $818,000,000, the total amount probably payable under the guaranty is estimated to be not in excess of $536,000,000. Of the latter amount, it is estimated that the amount still payable will aggregate $85,926,954.19.

OTHER RECOMMENDATIONS MADE

Besides the recommendations already referred to, the commission recommends the prohibition of the use in passenger trains of wooden cars between or in front of steel cars; changes in the hours of service act; appropriations sufficient to meet absolutely necessary requirements; the inclusion in section 20a of the interstate commerce act of electric railway companies engaged in the general transportation of freight; the amendment of section 25 making it unnecessary for common carriers by water in foreign commerce to file, and for the commission to publish, the information referred to in paragraph (1) of the section; the amendment of section 19 of the merchant marine act so that its provisions will clearly not be applicable to the Interstate Commerce Commission; and reconsideration of section 28 of the merchant marine act by the Congress.

ARIZONA CHAPTER MEETS; SELECTS OFFICERS

ARIZONA'S MINING problems and their relationship to similar issues of national scope were considered at the annual convention of the Arizona Chapter of the American Mining Congress which convened at Phoenix December 18. James F. Callbreath, secretary of the American Mining Congress, and P. G. Spilsbury, head of the Arizona Industrial Congress, were speakers. Mr. Callbreath outlined the work planned by the national mining organization for the coming year and Mr. Spilsbury gave a résumé of the work of the Industrial Congress.

G. M. Colvocresses, general manager of the Southwest Metals Company, was elected president of the Arizona chapter. Other officers named at yesterday's session were:

W. S. Boyd, general manager of the Ray Consolidated Copper Company, first vice governor; General John C. Greenway, general manager of the Calumet and Arizona Copper Company, second vice governor; F. W. Maclennan, general manager of the Miami Copper Company, third vice governor, and J. E. Curry, secretary.

Directors elected for the ensuing year were Robert E. Tally, Jerome; P. G. Beckett, Bisbee; T. H. O'Brien, Miami; F. W. Maclennan, Miami; Julius Kruttschnitt, Jr., Douglass; W. S. Boyd, Ray; G. M. Colvocoresses; W. C. Browning, Superior; J. S. Douglas, Jerome; Capt. J. P. Hodgson, Morenci; Roy Moore, Kingman; Michael Curley, Ajo; W. J. McBride, Globe, and Gen. John C. Greenway, Warren.

Robert E. Tally, general manager of the United Verde Copper Company of Jerome, and retiring governor of the state chapter, presided at the convention sessions.

Mr. Callbreath declared prospects of the nation's mining industry indicate prosperity for many years to come. Transportation and the labor shortage represent the two greatest issues confronting mining men he stated in discussing problems immediately before the industry. To some degree in his opinion the transportation problem may be solved by lowering the freight rates on basic material rather than on fabricated or finished products. In respect to the labor problem, changes in the immigration laws to limit immigrants to those who want to work and become citizens of America were the remedies pointed out.

Robert E. Tally, general manager of the United Verde Copper Company, spoke on "Mining—Past, Present and Future." The condition of Arizona's mines is improving, he said, and declared that copper mining will be one of the state's chief industries for many years to come.

Speaking of the attitude of the mines, Mr. Tally in conclusion said they were anxious to see the resources of Arizona developed. They favor development of the Colorado, on the basis of full reservation of Arizona's rights, good roads and good schools and efficient and economical government, he said, stressing the fact that the mine officials are ready to cooperate in every way to make Arizona a better state for all industries and all the people.

FUELS ARE COMPARED FOR HEAT VALUES

WIDE INTEREST for the industries of the country is held in conclusions drawn by the Bureau of Mines from its series of studies to determine the comparative value of coke, anthracite and bituminous coal for generating steam in a low-pressure cast-iron boiler. The bureau has just issued a bulletin setting forth the deductions drawn from the investigation and outlining in detail conditions under which the study was made.

The mean steaming values of coke, bituminous and anthracite coal were found to be practically identical. At the low rate of steaming the coke and anthracite evaporated more water than the bituminous coal, and at the higher rates of steam the bituminous produced a greater evaporation than the other two fuels. The steaming value of a mixture of the coarser coke breeze and bituminous coal was about 80 percent of that of the bituminous coal alone whereas the mean steaming value of the mixture of finer coke breeze and bituminous coal was lower than that of the mixture of coarser coke breeze.

OIL AGREEMENT ON PACIFIC TO BRING BROAD RESULTS

PROVISION of the enormous fuel supply for the Pacific fleet and means by which the government will gain immediate benefit of royalties from Naval Reserve No. 1, in California, have been pointed out as results to arise from the recent extension of a contract between the government and the Pan-American Petroleum and Transport Company.

Under an agreement reached December 14, the company is required immediately to drill offset wells to prevent drainage of the reserve and to construct and fill oil tanks at Pear Harbor. Expenses involved in meeting the new contract in the new classes are estimated as totaling between $12,000,000 and $15,000,000.

NATIONAL LEGISLATION

By E. H. PULLMAN

FACED with the necessity of enacting appropriation laws for the government service for the fiscal year beginning July 1 next, totaling more than three billion dollars, before the present Congress ends by constitutional limitation on March 4, both the House and Senate are devoting practically their entire time on this task to the exclusion of practically all other legislation. Members of Congress are inspired to this task by the hope that, if they are completed, they will, barring unexpected developments, enjoy a long respite from congressional activity in Washington for nine months, as it is the President's intention not to call an extra session of the new Congress, which will come into power on March 4, so that after adjournment on that date, the next session of Congress will not convene until the following December.

TAX SECURITIES

Between consideration of the appropriation laws, attention is being given to other matters in order to clear the calendar of all unfinished legislation. The House passed the ship subsidy bill which is now being pressed for vote in the Senate. The proposal to submit to the states a constitutional amendment to tax federal and state securities will be voted on by the House early in January. The anti-lynching bill, which had passed the House, was dropped in the Senate in the face of a strongly organized filibuster conducted by the Democrats which threatened to tie up all legislation. Agricultural legislation is also being pressed and may be completed before March 4.

President Harding mapped out an interesting field of legislation for Congress in a message early in December. In it he took occasion to criticize the coal and railroad strikes, saying that the former had no excuse for its beginning and less justification for its delayed settlement. The President stressed the importance of lower costs on basic materials, mentioning specifically reduced freight rates on coal. He favors the merger of railroads into systems, interchange of freight cars and economic use of railroad equipment. Recognizing the weakness of the Railroad Labor Board, he recommended its substitution in the Interstate Commerce Commission by a labor division of four additional commissioners.

Although there has been strong pressure for relaxation of the restrictions on foreign immigrants, the President desires that before further extension of admission of aliens is allowed that a system to register aliens in this country and to establish examination boards abroad to secure desirable aliens be established. Abolition of child labor, and a constitutional amendment to tax federal and state securities were also recommended as was also an investigation of the difference between production costs and prices of commodities.

The President also recommended adoption of the super-power project between Boston and Washington, which was reported on by the Geological Survey, to develop electric power for industries. A survey of a scheme to draft all resources, human and material, for national defense was also recommended.

There have been changes in the personnel of congressional committees considering mining matters. Senator Couzens, Rep., Mich., who succeeded Senator Newberry, resigned, has been appointed on the Mines and Mining and Labor Committees. Senator Brookhart, Rep., Iowa, who succeeded Senator Kenyon, has been appointed on the Labor and Manufactures Committees. Representative Zihlman, Rep., Md., is the new chairman of the House Committee on Labor, succeeding the late Representative Nolan of California. Representative McLafferty, Rep., Calif., has been appointed on the Mines and Mining Committee, succeeding the late Representative Conneil of Pennsylvania.

Bills were introduced for special coinage of fifty-cent pieces in commemoration of the 100th anniversary of the enunciation of the Monroe Doctrine, but passage by the House was blocked by objections of members on the ground that it was not consistent with the dignity of government coinage to permit the sale of coins at a premium to finance local expositions.

In the Department of Justice appropriation bill, it was again provided that none of the funds for anti-trust prosecution shall be used in suits against labor organizations.

A bill was introduced to give government approval to the agreement reached between western states for division and development of waters of the Colorado River.

COAL EMBARGO

Further agitation for a coal embargo was renewed in view of the shortage of supplies for American consumers. Representative Brennan, Rep., Mich., introduced a resolution calling on the Federal Fuel Distributor as to the advisability of imposing an embargo on anthracite to foreign countries.

Bills were introduced to grant leases and permits to persons who were dispossessed by the Supreme Court decision in the Red River oil case, and also to convey to Oklahoma the south half of the bed of the river.

A scheme for development of mineral resources in Alaska under a $50,000,000 United States platinum corporation was suggested.

A bill to strengthen the power of the Coal Commission to secure information was introduced.

The control of monopolies by a commission with authority to fix maximum prices was proposed.

Carrying out the President's recommendation, a bill was introduced to authorize the President in time of war to control the material resources, industrial organizations and services and to stabilize prices.

The Muscle Shoals project still remains unacted on by both Houses, the disposition being to allow this matter to go over until the next Congress. A bill to develop the Muscle Shoals properties under a Federal Chemical Corporation was introduced.

Enlargement of the organic act of the

IMPORTANT BILLS REVIEWED IN THIS ISSUE

MINING—

H. R. 12967: By Mr. Petersen, N. Y. (Alaskan Minerals)

COAL—

H. Res. 473: By Mr. Brennan, Mich. (Anthracite Embargo)

S. 4160: By Mr. Borah, Idaho.

H. R. 13294: By Mr. Winslow, Mass. (Coal Commission)

INDUSTRY—

H. R. 13091: By Mr. Frear, Wis. (Monopoly Control)

H. Res. 448: By Mr. Wise, Ga. (Calcium Arsenate)

H. R. 13201: By Mr. Johnson, S. D. (Resources control in war)

H. R. 13181: By Mr. Dickinson, Iowa. (Muscle Shoals)

COMMERCE—

H. R. 13293: By Mr. Winslow, Mass. (Commerce Promotion)

H. R. 12817: By Mr. Brookhart, Iowa. (Ship Subsidy)

H. R. 13160: By Mr. Hawes, Mo. (Regional Commissions)
H. R. 13161:

H. J. Res. 389: By Mr. Zihlman, Md. (Building Materials)

COINAGE—

S. 4096: By Mr. Johnson, Calif.

H. R. 13194: By Mr. Lineberger, Calif. (Special Coins)

WATER POWER—

H. R. 13480: By Mr. Mondell, Wyo. (Colorado River)

H. R. 13344: By Mr. Dupre, La. (Waterways Commission)

Department of Commerce to include investigations now conducted under appropriations subject to limitations by the Budget Bureau and congressional committees was introduced. These investigations would cover raw materials and water pollution.

To expedite rate adjustments, measures were introduced to establish branch offices of the Interstate Commerce Commission in various parts of the country.

Development of waterpower and waterways under a waterways commission to take over existing government agencies considering this matter was proposed.

Hearings were conducted by the House Committee on Banking and Currency on the bill of Representative Goldsborough, Dem., Md., for a flexible dollar based on commodity prices. The bill was endorsed by economists of eastern colleges and opposed by representatives of the Farmer-Labor Party. Action on the measure, which would displace the present gold standard, is not expected at this session.

Hearings were also held by the Senate Interstate Commerce Committee on the Denison Blue Sky bill, which has already passed the House. Opposition to the measure was advanced by Secretary J. F. Callbreath of the American Mining Congress, W. J. Graham of Arizona, and A. G. MacKenzie of Salt Lake City on the ground that it would discriminate against small enterprises and investors. Mr. Callbreath suggested as a substitute a measure drafted by Judge E. C. Stimson and Geo. L. Nye of Colorado which provides that persons desiring to offer securities shall file statements concerning their enterprise every six months to an agency in Washington, with penalties for misstatements.

Impeachment Charges

Both Houses passed a bill to permit the filing of claims in 1923 for the return of property held by the Alien Property Custodian. The present law limits the filing of claims to the end of 1922.

The House Judiciary Committee conducted hearings on charges made by Representative Keller, Rep., Minn., that Attorney General Daugherty should be impeached for various reasons, including his failure to prosecute oil companies in California for unlawful possession of oil lands in that state; for enforcing an injunction against striking railroad employes, and for failure to enforce anti-trust prosecutions. Hearings had hardly gotten under way when Representative Keller dramatically quit the committee, refusing to furnish further evidence as to the charges or to submit to subpoena of the committee for his cross-examination. Mr. Keller stated his action was based on the charge that the committee was biased and prejudiced against him. Attorney General Daugherty denied the charges, producing evidence showing considerable anti-trust prosecution, justifying the strike injunction on the ground that it imperiled the country, and the fact that the Interior Department had considered the California oil land case.

The Senate passed a bill forbidding the transmission through the mails of communications threatening bodily harm or injury to persons or property.

Hearings were held by the House Committee on Public Lands on the bill which has the approval of the President and the War, Navy and Interior Departments for the conservation of helium by the Interior Department under an appropriation of $5 000,000.

The War Minerals Relief Commission reported to Congress on the settlement of claims up to November 30 stating that 645 claims remain to be adjusted. Pierce Butler, prominent railroad lawyer of St. Paul, was nominated and confirmed as a justice of the Supreme Court. Another justice will shortly be appointed to the court to succeed Justice Pitney, whose retirement on account of illness has been authorized by Congress.

MINING

(Alaska Minerals)

H. R. 12967. Introduced by Mr. Petersen (Rep., N. Y.) by request. Referred to the Committee on Public Lands. This bill proposes to incorporate a United States Platinum Corporation to aid in the development of the mineral resources of Alaska. L. R. Beckley is named as the principal incorporator. The corporation would be authorized to locate and develop all platinum sands owned and controlled by the government in Alaska. There would be a board of commissioners, 20 to constitute a quorum, which would meet in New York within three months after the passage of the act, to receive stock subscriptions and organize the United States Platinum Corporation under a board of 11 directors, the capital stock not to exceed $50,000,000 in $100 shares. The corporation would make annual report in July to the Secretary of the Treasury. The bill authorizes the appointment by Congress of five commissioners on Platinum and Allied Industries for supervision of the Platinum Corporation.

COAL

(Anthracite Embargo)

H. Res. 473. By Representative Brennan (Rep., Mich.). Referred to the Com-

mittee on Interstate Commerce. This resolution directs the Federal Fuel Distributor to report the amount of anthracite coal produced in the United States which has been shipped to Canada and other foreign countries since September, 1922, and its proportion to the total amount of anthracite produced in this country since that time. It also calls on the Distributor to report as to the advisability of an embargo upon the exportation of anthracite coal to Canada and other foreign countries until the requirements of American consumers are satisfied.

(*Coal Commission*)

S. 4160. Introduced by Mr. Borah (Rep., Idaho). Referred to the Committee on Labor. This bill amends the Coal Commission law by authorizing the Commission or any of its officers, employes or agents to require answers to written questions of fact concerning any matters upon which the Commission is authorized to investigate and imposing a penalty of $5,000, imprisonment for one year, or both, for failure to comply or for making false statements.

H. R. 13294. Introduced by Mr. Winslow (Rep., Mass.). Referred to the Committee on Interstate Commerce. This is similar to the foregoing.

INDUSTRY

(*Monopoly Control*)

H. R. 13091. Introduced by Mr. Frear (Rep., Wis.). Referred to the Committee on Judiciary. This bill is designed to control monopolies and creates a monopoly control commission of nine members at $10,000 yearly salary. The bill declares that combinations or conspiracies to monopolize the sale or fix the price of any commodity in interstate commerce are affected with a national public interest and subject to regulation. The commission would, on petition by any person, firm, corporation, association or organization, or on its own motion, investigate whether any person, firm or corporation, or any combination or association of such persons, etc., is engaging or attempting to engage in any monopoly. Hearing would be given such parties whose practices are to be investigated. The commission would make public declaration if it found that any practices investigated constitute a monopoly or attempt to form a monopoly, price fixing or attempt to fix prices by open or secret agreement. The commission would prescribe maximum prices which should be charged for such commodity or improvement or change in service for the public benefit. After hearing, the commission could rescind its order fixing a maximum price or modify it by increasing the maximum previously fixed or increase or diminish the area in which the order would apply. Declaration of a monopoly would require action by five commissioners. Orders of the commission would be final unless within 60 days after its announcement appeal should be made to a circuit court of appeals requesting the setting aside or modification of the order. The bill prescribes that any person selling in the area covered by the order of the commission any commodity at a price in excess of the maximum fixed by the commission shall be punished by a fine of not exceeding $5,000 or imprisonment not exceeding one year. The commission and its agents would have access to books of persons investigated and power to require attendance of witnesses. Failure to produce books or to testify would subject the offender to a fine of from $1,000 to $5,000 and one year in prison. The bill provides $500,000 for expenses of the commission. The bill repeals the Sherman and Clayton anti-trust laws.

(*Calcium Arsenate*)

H. Res. 448. Introduced by Mr. Wise (Dem., Ga.). Referred to the Committee on Interstate Commerce. This resolution proposes that the Federal Trade Commission shall investigate the cost of manufacturing and producing calcium arsenate and report whether its production is controlled by any combination, monopoly or trust and whether dealers in this product are engaged in any unlawful conspiracy by which the price is enhanced.

(*Resources Control in War*)

H. R. 13201. Introduced by Mr. Johnson (Rep., S. D.). Referred to the Military Committee. This bill proposes that in case of war, the President shall determine and proclaim the material resources, industrial organizations and services over which government control is necessary to successful termination of the emergency, such control to be exercised by him through agencies then existing or which he may create for such purpose. It also proposes that the President shall take steps necessary to stabilize the price of services and commodities declared essential, whether they are required by the government or by the civilian population.

(*Muscle Shoals*)

H. R. 13181. Introduced by Mr. Dickinson (Rep., Iowa). Referred to the Committee on Military Affairs. This bill proposes the incorporation of a federal chemical corporation to take over government properties at Muscle Shoals, Ala., for the manufacture of explosives for the Army and Navy; manufacture of fertilizer for agriculture; and research laboratories and experimental plants for the development of fixed nitrogen.

COMMERCE

(*Commerce Promotion*)

H. R. 13293. Introduced by Mr. Winslow (Rep., Mass.). Referred to the Committee on Interstate Commerce. This bill enlarges the organic act of the Department of Commerce by authorizing it to make certain investigations which are now conducted under appropriations subject to elimination by the Budget Bureau or congressional committees. The bill authorizes commercial attaches; trade commissioners; investigations concerning restrictions and regulations of trade in foreign countries; directory of foreign buyers; collection of information regarding commerce in and disposition of raw materials and manufactures; district offices; investigation of domestic and foreign problems related to production, distribution and marketing as they relate to important export industries; distribution of industrial motion pictures; exporters' index; enforcement of the China Trade Act; and authorizing the Fisheries Bureau to conduct investigations relating to pollution of waters affecting fish.

(*Ship Subsidy*)

H. R. 12817. Introduced by Mr. Brookhart (Rep., Iowa). This is an amendment to the ship subsidy bill providing that shippers of products to be carried by vessels receiving subsidy shall receive a refund of 10 percent of transportation charges on the goods from the point of origin to the port of export.

(*Regional Commissions*)

H. R. 13160 and 13161. Introduced by Mr. Hawes (Dem., Mo.). Referred to the Committee on Interstate Commerce. These bills propose the establishment of seven district commissions of the Interstate Commerce Commission with headquarters at Boston, New York, Atlanta, Cleveland, Chicago, St. Louis and San Francisco, each commission to consist of three members to consider interstate commerce cases in their territories, with appeals to the main commission at Washington.

(*Building Materials*)

H. J. Res. 389. Introduced by Mr. Zihlman (Rep., Md.). This bill would authorize the Interstate Commerce Commission to give priority in car service in the interest of equitable distribution of building materials. The resolution points out that "building operations and housing projects initiated and in contemplation throughout the United States upon a gigantic scale are seriously impeded, checked or suspended entirely by a practical embargo upon the transportation of

essential building materials destined for immediate consumption by reason of car shortage, thereby entailing heavy financial losses upon dealers, building contractors, mechanics and laborers and inconvenience to the public." The bill authorizes the commission to issue priorities in car service, embargoes and other measures in favor of or against any railroad, region, community, corporation or person and to take other steps for priority in car service and equitable distribution of building materials for immediate consumption in building operations so as to meet the emergency and to prevent extortion in prices for building materials. Referred to the Committee on Interstate Commerce.

COINAGE

(*Special Coin*)

S. 4096. Introduced by Mr. Johnson (Rep., Calif.). Reported by the Committee on Banking. This bill would authorize the coinage of not more than 300,000 fifty-cent pieces in commemoration of the 100th anniversary of the enunciation of the Monroe Doctrine.

H. R. 13194. Introduced by Mr. Lineberger (Rep., Calif.). This bill is similar to the foregoing, but its consideration by the House was prevented by objections of several members, on the ground that special coins should not be issued and sold at a premium at expositions.

WATER POWER

(*Colorado River*)

H. R. 13480. Introduced by Mr. Mondell (Rep., Wyo.). Referred to the Committee on Irrigation. This bill proposes to give government approval to the Colorado River compact between Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming for distribution and development of the waters of the Colorado River. The compact to become effective must also be approved by the legislatures of the states concerned.

(*Waterways Commission*)

H. R. 13344. Introduced by Mr. Dupre (Dem., La.). Referred to the Committee on Flood Control. This bill would create a waterways commission of seven members, one of whom would be an army engineer and one an expert civil hydraulic engineer. The commission would embrace engineering, scientific and constructive services of the government, and would study the development and control of waterways and water resources, and the utilization of waterpower, conservation of water for agriculture, industrial, municipal and domestic uses. The commission would report to Congress plans for the development of waterways and water resources for navigation and other useful purposes.

MANY PRESSING OIL SHALE TOPICS

By Dr. Victor C. Alderson

There are, in addition to the general features connected with oil shale, one or two of pressing importance at the present time. To those of us who are close to the western deposits, the question of what constitutes valid assessment work is of immediate concern. At the present time a man owning an oil shale claim and doing the assessment work, does what he thinks will pass, and then it is for the government to decide whether it will or not. Those of us who are close to the ground feel that the government ought to decide what they will accept, so that a man need not waste his time and money and in the end find that the work will not be accepted. We feel that some careful thought should be given to the matter and a ruling made by the Department of the Interior as to what will or will not be accepted as valid assessment work.

Precious Metals in Shale

Another important phase to which I think attention should be devoted is the propaganda that has been spread abroad covering the finding of large quantities of gold, silver, and platinum in our shales. Whether our shales contain the precious metals is, in some quarters, at least, a debatable point. Some men claim they have found them; others say they have not. We out west know that a good deal has been said on that subject. We seek light on the matter.

Another phase of this matter which should be considered is one that bears directly upon the good character and reputation of everybody who pretends to know anything about this matter of oil shales; that is the fake promoter. Every new industry has had him; the oil industry had him; the mining industry had him; the timber industry has had him. It is fortunate that, in the oil shale game, the crook has splendid opportunity. The government publishes exact figures; other publications of the best engineers contain the straight facts only. Those facts are so pronocnced, the figures are so big, and the deposits so extensive that the fake promoter does not need to enlarge upon them. He can take Dean Winchester's government publications and get the basis for all the conclusions he needs. That is the first misfortune. The second misfortune is that he can take a piece of shale, a test tube, and a lamp and can make the oil and gas before the eyes of his dupes. Well, you put the governmental facts in his hands and give him a little piece of shale to work on, let him show the ignorant that he can actually make oil and gas; imagination and cupidity will do the rest. It is very, very easy for the fake promoter to sell his stock. I receive in my mail many letters from men who tell me that they dealt with a certain man in a certain city, they bought so many thousand shares of stock, that he has now left town, and his office is closed. The stockholder wants to know if I have any knowledge of the man or his company. Incidentally, he wants to know hat his stock is worth. That happens again and again.

CURRENT OIL SHALE BIBLIOGRAPHY

Alderson, Victor C.—Oil Shales in Kentucky, Colorado School of Mines Quarterly, October, 1922. Oil Shale in Russia, Railroad Red Book, November, 1922, pp. 987-989.

Bailey, E. M., The Shale Oil Industry of Scotland, Journal of the Institute of Petroleum Technologists, London, October, 1922, pp. 465-490. Current Oil Shale Bibliography, Mining Congress Journal, November, 1922, p. 1057.

Franks, Arthur J., and Godier, B. D., Preliminary Study of the Organic Matter of Colorado Oil Shales, Colorado School of Mines Quarterly, October, 1922. Supplement A.

Hoskin, Arthur J.. What's Wrong With the American Oil Shale Industry, Engineering and Mining Journal Press, November 4, 1922, pp. 815-818.

Howell, George, The Brunswick Shale Deposits, Oil Engineering and Finance, London, March 4, 1922, pp. 272-274.

McKee, Ralph H., Shale Oil, Journal of Ind. and Eng. Chem., September, 1922, p. 847.

Mills—Davies, J. E., The African Oil Corporation, Ltd., South African Mining and Engineering Journal, September 30, 1922, pp. 33-34.

Oil Land Act of February 25, 1920. Section 26, General provisions applicable to coal, phosphate, sodium, oil, oil shale and gas leases. Business of Oil Production, pp. 207-211, John Wiley & Sons, New York.

Oil Position in South Africa, Petroleum Times, London, October 14, 1922, p. 580.

Oil Shale Men Meet in National Conference, Mining Congress Journal, November, 1922, pp. 1056-7.

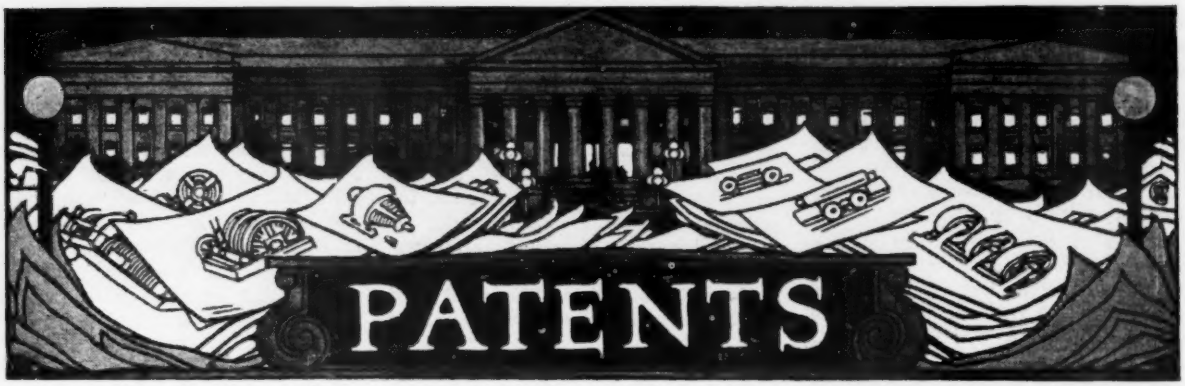
Proceedings of the National Oil Shale Conference, Cleveland, Ohio, October 9-14, 1922, Colorado School of Mines Quarterly, October, 1922. Supplement C.

Shale Oils, Oil Engineering and Finance, London, March 4, 1922, p. 268.

Some United States Petroleum Problems, Railroad Red Book, November, 1922, pp. 990-991.

White, David, The Oil Supply of the World, Mechanical Engineering, September, 1922, pp. 567-8.

Winchester, Dean E., Factors Influencing the Value of Oil Shale Land, Petroleum Times, London, October 28, 1922, pp. 655-657.



CONDUCTED BY JOHN BOYLE, JR.

1,430,592 — *E. C. Rowdon*, Sound Beach, Conn., October 3, 1922.

GOLD WASHING AND SAVING APPARATUS, designed to be used in connection with dredges, and which comprises depositing the gravel upon a grizzly, subjecting the material to water, diverting the coarse material in one direction, carrying the finer material and the water in another direction to a trommel screen which separates the coarser material and diverts it to the waste pit, delivering the finer material and the water to a launder, which conveys it to a second trommel screen, where it is again separated, the coarser material being diverted to the waste pit while the water and the finer material is carried into a second launder, which conveys it to a third trommel screen which again separates the coarser material which is diverted to the waste pit, while the fine material and all of the water is delivered to a launder which conveys it to an amalgamator.

1,430,665—*E. P. Mayhew*, Kimberly, Nevada, October 3, 1922.

ORE CLASSIFIER, embodying a series of tanks, the tanks being connected so that the water will flow from one tank to another in series, a water pipe, preferably of flexible material, entering each of said tanks and connected to a plurality of sprayers disposed within the tank and so designed as to discharge water in sprays in all directions to thus thoroughly agitate the content of the tank and wash away the light material, leaving the heavy material in the tank.

1,430 669—*E. C. Morgan*, New York City, October 3, 1922.

MINING AND LOADING MACHINE, whereby material is completely severed from a mine wall and then moved back from the mine wall into position for loading. When the cutter bar is moved in the manner described it severs an upright crescent-shaped section of material which, when loosened, drops downwardly and may break up to some extent and means must be provided for removing the material thus disengaged in order that the mining operation may continue. To receive the severed material and to carry it backwardly out of the way of the machine to a point where it may be transported from the mine a convevor belt is provided.

1,432,101—*P. Danckwordt*, Denver, Colo., October 17, 1922.

DISTILLING OIL SHALE by continually charging highly heated waste shale and raw shale into a still, allowing the two portions to mix, whereby heat is transferred to the raw shale sufficient to drive off all the volatile matter, condensing the latter and withdrawing the waste shale continuously from the still.

1,432,585—*C. D. Abraham*, Wilmington, Del., assigned to E. I. du Pont de Nemours & Co., October 17, 1922.

MINE VENTILATING TUBING MATERIAL comprising a fabric base having a coating containing rubber, pine tar and paraffin.

1,432,921—*S. J. Swanson*, St. Louis, Mo., October 24, 1922.

APPARATUS FOR SEPARATING GRAPHITE whereby a very high percentage of pure graphite in flake form may be separated from the crushed material, containing graphite, and to attan this object the apparatus includes means for spreading the crushed material into a sheet formation within a suitable enclosure, allowing the heavier particles of rock to fall by gravity, and gathering the lighter flakes of graphite by an air current circulating through the sheets or streams of crushed material, whereby the flake graphite is enectually withdrawn from the heavier portions of material.

1,433,022—*N. A. Michaelson*, Uniontown, Pa., October 24, 1922.

MINE CAGE having a chute adapted to receive material from cars carried by said cage, an apron member pivotally suspended from the rear end of said chute and adapted to be moved rearwardly by said cage as it is moved into tilting position.

1,433,046—*J. H. Thacher*, Kansas City, Mo., October 24, 1922.

OIL WELL CLEANER comprising a pipe and a rotatable steam distributor on the end of the pipe.

1,433,348—*A. S. Dwight*, New York City, October 24, 1922. Assigned to Dwight and Lloyd Metallurgical Co.

PROCESS OF TREATING ORES TO SINTER THEM comprising treating fine metal ore carrying a combustible constituent, consisting in arranging the ore mass in a relatively thin stratum permeable to gases, confining the stratum gas-tight around its edges, enclosing the space immediately above the top surface of the ore stratum by a chamber gas-tight with reference to the ore stratum and its support, causing surface ignition of the ore stratum within the chamber near one end thereof, supplying air to the chamber and causing it to pass transversely through the ore stratum, moving the ore stratum gradually under the said chamber whereby the ore stratum is first ignited at its surface, and thereafter internal combustion is carried on through it apart from and beyond the zone of ignition, and finally removing the sintered material from the holder.

1,433,349—*A. S. Dwight*, New York City, October 24, 1922. Assigned to Dwight and Lloyd Metallurgical Co.

APPARATUS FOR TREATING ORES TO SINTER THEM, comprising a pervious support for a thin bed of ore, means for causing a supporter of combustion to pass through the ore and its support throughout the entire agglomerating or sintering operation, means for igniting the material by causing flaming particles and highly-heated products of combustion to be temporarily passed above and across the upper exposed surface of the supported bed of ore.

1,433,350—*A. S. Dwight*, New York City, October 24, 1922. Assigned to Dwight and Lloyd Metallurgical Co.

APPARATUS FOR SINTERING OR AGGLOMERATING METALLIFEROUS SUBSTANCES, the combination with means for holding a body of ore disposed in an open stratum, of a fire chamber adjacent to said ore mass, and a duct arranged to deliver the products of combustion from the said chamber to a limited area of the surface of the ore mass for the purpose of igniting it, substantially as set forth.

1,433,351—*A. S. Dwight*, New York City, October 24, 1922. Assigned to Dwight and Metallurgical Co.

PROCESS OF TREATING ORES TO SINTER THEM, which consists in forming a thin pervious bed of ore containing a combustible constituent, igniting the ore at an exposed surface thereof by a broad mass of highly-heated products of combustion applied across a relatively wide area of the ore surface at one end the same period of time and continuing the combustion thus started while the contiguous particles of the mass are maintained in a condition of relative quiescence.

1,433.352—*A. S. Dwight*, New York City, October 24, 1922. Assigned to Dwight and Lloyd Metallurgical Co.

APPARATUS FOR TREATING ORES TO SINTER THEM, comprising a perforate support for a thin bed of ore, a hood for covering the ore while upon the support, means for causing currents of air or other supporter of combustion to pass through the ore while covered by the hood, and an igniter arranged within the hood for setting fire to the ore at its surface.

1.433 353—*A. S. Dwight*, New York City, October 24, 1922. Assigned to Dwight and Lloyd Metallurgical Co.

Following Through

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AUTOMATIC COAL SKIP
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

AUTOMATIC (Mine Doors, Truck and Electric Switches)
American Mine Door Co., Canton, Ohio.

BAROMETERS
Taylor Instrument Companies, Rochester, N. Y.

BATTERY-CHARGING EQUIPMENT
General Electric Co., Schenectady, N. Y.

BELTING (Conveyor, Elevator, Transmission)
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

BELTING, SILENT CHAIN
Morse Chain Co., Ithaca, N. Y.

BINS (Coke and Coal)
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Ingersoll-Rand Co., 11 Broadway, New York City.

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BLASTING SUPPLIES
du Pont Powder Co., The E. I., Wilmington, Del.
Hercules Powder Co., 934 King St., Wilmington, Del.

BLOWERS
General Electric Co., Schenectady, N. Y.

BLOWERS' CENTRIFUGAL
Ingersoll-Rand Co., 11 Broadway, New York City.

BOILER MOUNTINGS
Lunkenheimer Co., Cincinnati, Ohio.

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Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.

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Allis-Chalmers Mfg. Co., Milwaukee, Wis. (feed pump).

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Lidgerwood Mfg. Co., 96 Liberty St., New York City.

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Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
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Car-Dumper & Equipment Co., Chicago, Ill.

CAR DUMPS
Car-Dumper & Equipment Co., Chicago, Ill.

CAR AND CAR WHEELS
Hockensmith Mine Car Co., Penn Station, Pa.

CAR-HAULS
Car-Dumper & Equipment Co., Chicago, Ill.

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Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
The Lunkenheimer Co., Cincinnati, Ohio.

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Jeffrey Mfg. Co., Columbus, Ohio.
Morse Chain Co., Ithaca, N. Y.

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Morse Chain Co., Ithaca, N. Y.

CHAINS, DRIVE
Morse Chain Co., Ithaca, N. Y.

CHAINS, FRONT END
Morse Chain Co., Ithaca, N. Y.

CHAINS, OILING
Morse Chain Co., Ithaca, N. Y.

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Morse Chain Co., Ithaca, N. Y.

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Morse Chain Co., Ithaca, N. Y.

CHAINS, SLING
Morse Chain Co., Ithaca, N. Y.

CHAINS, SPROCKET WHEEL
Morse Chain Co., Ithaca, N. Y.

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Traylor Eng. & Mfg. Co., Allentown, Penna.

CONVEYORS, BELT
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

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Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Wilmot Engineering Co., Hazleton, Pa.

CONVEYORS, COAL
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Lidgerwood Mfg. Co., 96 Liberty St., New York City.

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Jeffrey Mfg. Co., Columbus, Ohio.

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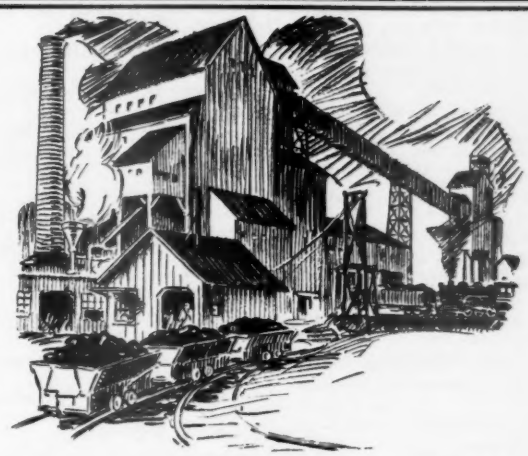

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Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

Ohio Brass Co., Mansfield, Ohio.

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General Electric Co., Schenectady, N. Y.

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Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

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Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.

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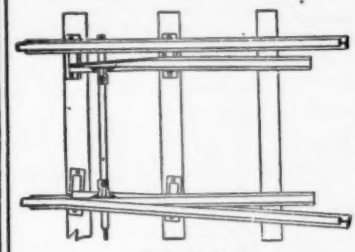

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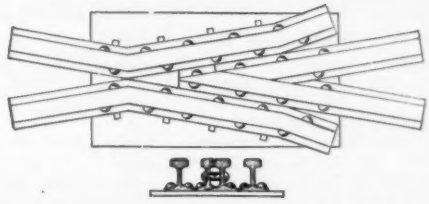

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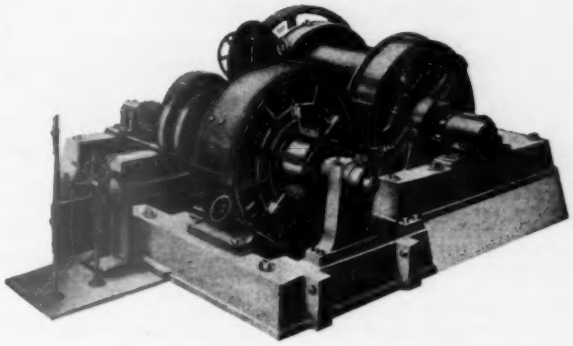

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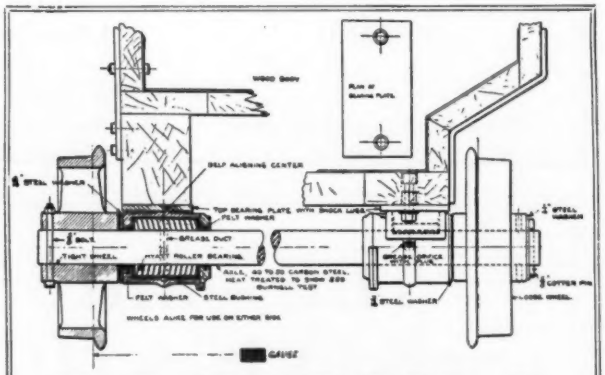

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